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The Journal of Abnormal and Social Psychology

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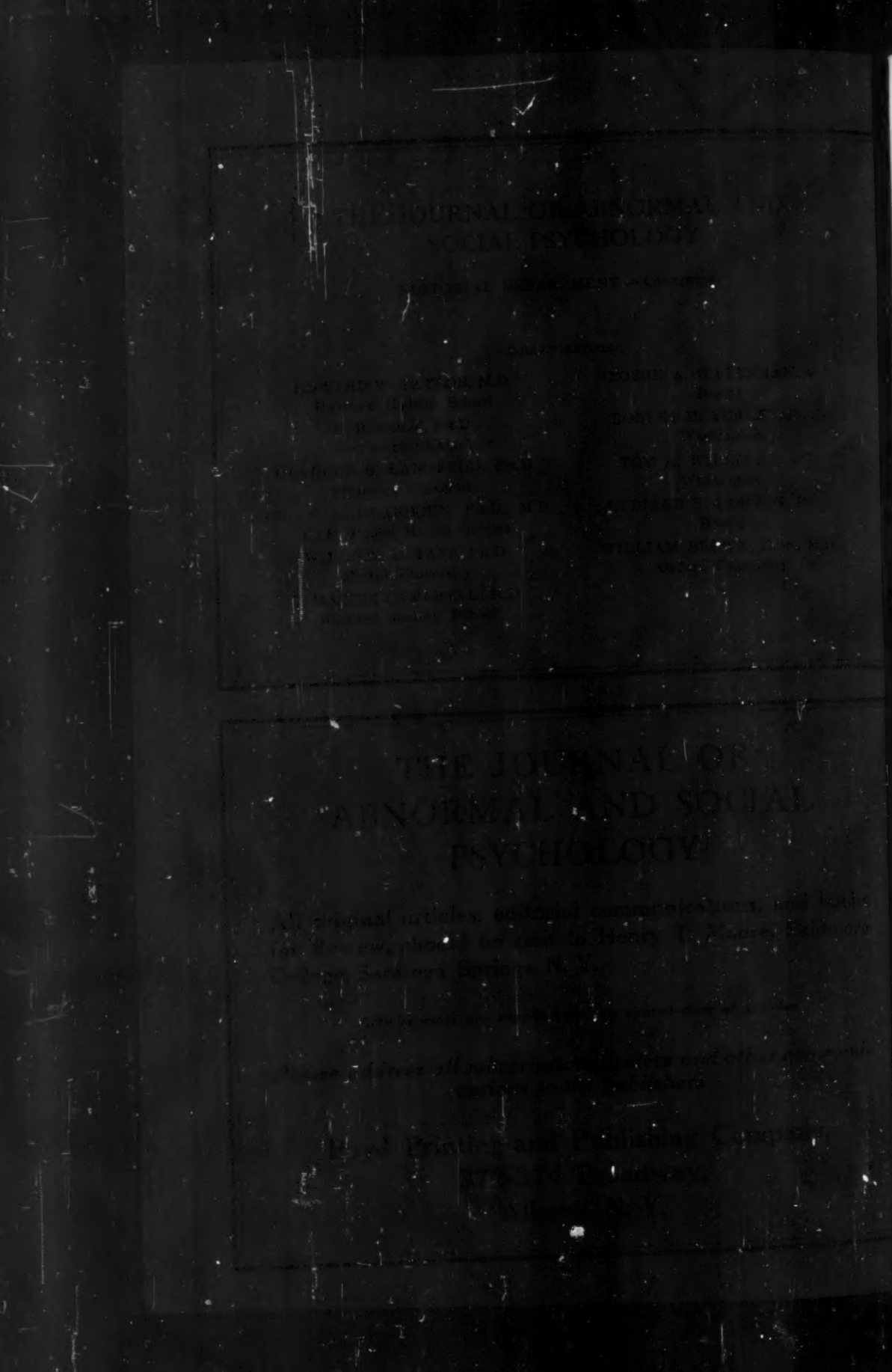

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EDITORIAL

PSYCHOLOGY AND MEDICINE

In an address on the occasion of the recent dedication of the Medical Center in New York, Dr. Lambert gave expression to certain theoretical views that will meet with sympathetic reception by the abnormal psychologist.

He said in part: "The science of medicine is not an exact science governed by laws and rules of mathematical accuracy. Rather it is empirical, founded on experiment and experience. The practice of medicine has to consider too many variables in the application of its theories and its art ever to become fixed and unchangeable. . . . Medicine has to consider the varying resistance to disease of the human organism and equally the changing virulence of the bacterial causes of acute infections. All the facts having to do with these medical problems are as yet undiscovered and in consequence medical science is constantly changing its theoretical explanation of observations which are noted in the laboratory by the scientific worker and at the bedside of their patients by the practitioners of the clinical art.

"The soul of the medical school and hospital is the medical clinic and every specialty is an offshoot and growth from it."

The analogy between psychology and medicine at this point is a fruitful one. The oft deferred hope that psychology may one day become to its immense profit an exact science in which mathematics reigns supreme has lured the workers of the laboratory into many strange and futile paths and has made for a too final dependence on coefficients of correlation, quotients of intelligence, indices of fatigue, rates of learning, and conditionings of reflexes. The greatest service of abnormal to theoretical psychology has been its constant stressing of the fact that the soul of psychology like the soul of medicine is the clinic; that every minute investigation of behavior, if it is to have significance, must be in some sense an offshoot and growth from the larger stem of clinical observation.

When the aspiring young experimenter in psychology, like the research worker in medicine, asks himself as he states his problem: "On what larger aspect of behavior adjustment does this problem bear?", we shall be in a fair way to secure a larger return on the present immense investment in psychological research.

WHY WE HAVE TRAITS—NORMAL AND ABNORMAL THE THEORY OF INTEGRATION OF DISPOSITIONS*

(An Introduction to the Study of Personality)

By MORTON PRINCE

I KNOW of no problem of more practical importance than that of personality. Upon its correct solution depends our understanding of character and human behavior. And this is true not only of individuals but of groups of individuals,—of communities, nations and races. It is not too much to say that without a comprehensive insight into the psychology of personality, we cannot understand the reactions of the individual to his environment, or of social and political groups and even of nations to each other and to their respective situations. And such an understanding must include, besides the individual traits of which personality is composed, the motivations which are the springs of action and which determine behavior.

But before entering upon our theme let us have a little more precise conception of what we mean by personality. It is commonly agreed, as I think must be admitted, that, from a descriptive point of view, personality is the sum total of its traits and that differences of personality depend upon differences in traits, on the one hand, on the varying combinations of them, on the other.

But what are traits? All writers do not mean the same thing by traits and consequently do not accept the same definition. What one would include as a trait another would not. In the present discussion from a purely descriptive point of view by traits is meant the sentiments and ideals with their meanings for the individual; the more complex habits; the fixed acquired beliefs and prejudice and likes and dislikes; the accepted ethical and social codes of conduct; the aspirations and enduring desires; the innate cravings, or urges, or impulsions and appetites and inherited tendencies in general; and many other analogous characteristics of human nature, all of which, according to their varying combinations, distinguish one individual from another and determine behavior.

* Presented at the Annual Meeting of the American Psychological Association, December 28, 1928.

All of those I have mentioned, however, are not basic and primary. Some are secondary in that they are compounds of primary traits, or resultants and modes in which the primary basic traits find expression. In any case the terms are descriptive and not explanatory.

Let us be a little more specific and for this purpose turn to a few historical personages for concrete traits illustrative of these general categories.

Let us take Bismarck. His will-to-power, his pugnacity, his contempt for his political foes and his colleagues as well as the masses; his egotism and sense of superiority; his ruthless ambition to dominate every situation for the aggrandizement of Prussia; his fearlessness and courage to grasp power and responsibility; his assertion of personal dictatorship; his rancorousness, impatience, and irritability when thwarted and resentment of opposition; his sentiments of love for his wife and children and dogs and the forest; of aversion to his mother; his pride of self, of his caste, and Prussia; of reverence for monarchy and hatred of democracy; his lust for revenge, even to cruelty; his egotistic domestic habits; his habits of deceit, trickery, and actual lying to achieve diplomatic ends, and his belief in "blood and iron" to accomplish political aims, were indisputably all traits of his personality and they manifested themselves throughout his life in characteristic behavior. And, plainly, these traits are specific examples of the various descriptive categories of sentiments, habits, ideals, beliefs, etc., I have mentioned. It requires no psychologist to recognize these peculiarities of the man as traits. But for the most part they were not basic. Rather, many of them were the mode of expression, the resultants, so to speak, of and secondary to other and fundamental units of personality, such as his self-regarding sentiment and idea of self, his pugnacity instinct and that of self-assertion, his belief in the divine right of his king to rule, his political ideals of government, his aspirations for the hegemony of his native state over all Germany, etc. Some of these fundamental units were *instinctive* and *inherited*.

Others were *acquired* in the course of life's experiences. These instinctive urges, sentiments and systems of ideas were the true basic traits out of which sprung the many traits for which he was noted and which determined the behavior that bullied his world of politics and social life. So his traits may be defined in terms of behavior or in terms of the basic mental and instinctive springs of action.

Likewise we all recognize, to take another historical illustration by way of contract, that Lincoln's personal uncouth habits, his sense of humor and tendency to melancholic moods; his moral ideals and faith in God; his charitableness, intellectual honesty, sympathy with the unfortunate and the slave; his abnegation of self and absence of pride; his moderation and marvelous patience and tolerance of opposition; his sentiments of hatred of slavery but reverence of law and the constitution and the Union; his faith in the common people and belief in democracy and government by the people; his "hatred of violence in any form or by any body," his "passion for fairness" and his abhorrence of "iron and blood" were traits of his personality.

Could there be any greater contrast than that between the personalities of Bismarck and Lincoln? An appraisal of two great statesmen by the standard of ethical values would beyond question award to Lincoln the greater character. But for psychology, which takes no account of such values, Bismarck had the more interesting and intriguing personality. And can it be denied that the personality of each was the sum total of its traits?

If I may take one more interesting historical personage for illustration, Disraeli's youthful habits of foppery, theatrical playing of the mountebank and love of personal display as well as the political ambition, the will-to-power, the self-assertion, the love of imperial tinsel and of his queen, characteristic of his maturer political life, were traits. The traits of Napoleon and of the late kaiser, William II, might be cited in similar fashion. Biographers have recognized the traits of historical personages by their behavior, but, not being psychologists, they have not traced them to the basic units of personality. Indeed it would take a psychological examination of the individual to do so, particularly as objective behavior is, as every one now-a-days knows, frequently the expression of subconsciously working traits; and too often it happens that, even after intensive psychological analysis of the personality, the conclusions are matters of interpretation and doctrines on which many may differ.

And here it is as well to remember that *phobias, impulsions and other obsessions are traits of personality* and belong in the same categorgy as deep-rooted prejudices and aversions and normal fears. They are pathological simply because they prevent proper adaptation to the situations of everyday life. Likewise criminal and delinquent habitual tendencies and behavior are traits. In my judgment we shall never understand the criminal mind and the problem of crime until we recognize that the behavior of the

criminal is the manifestation of traits that in principle are created and organized precisely in the same fashion as are those of the socially behaving individual.

According to the theory I am now exposing, as will be later seen, the traits of personality are the springs of action, the principal motivating forces that determine the logical and other intellectual processes of thought. Some of them consciously, others—such as desires, aversions, fears, and sentiments of self, of hatred and affection and pride, sometimes subconsciously, and therefore unwittingly, marshal associated memories, originate, guide and control processes of creative imagination and other processes of thought which carry the urge of the traits to fulfilment and determine behavior.

A study, then, of human nature resolves itself into a study of traits. Poets, dramatists and fiction writers in general, by combining a number of selected psychological traits in one character, seek to create theoretical personalities. Sometimes their creative imagination eventuates in a psychological success, other times in a psychological impossibility. But in any case it is rare (if ever attained) that the constructed personality is the whole personality. Only a few selected traits are drawn in full light while the rest are left in shadow or entirely out of the picture. For the purposes of art this method is a necessary canon. It would be impossible to draw a picture of an individual that would include all his traits, for traits are manifested as reactions to situations and the situations would have to be multiplied beyond all bounds to exhibit them all.

Hamlet lets us see only one side of his personality which comes to light as a reaction to a simple situation, the death of his father and remarriage of his mother to his uncle who turns out to be the murderer of his father. Iago discloses also only a single trait. It is safe to say that, if these two characters were real human beings, they had many other traits which would have been manifested in situations of a kind that would have called them forth. Very likely one who had known Iago intimately would have recognized that his devilishness was only a compensatory reaction to a feeling of inferiority and was a mode by which he was trying to get square with the world. It would make an amusing, as well as a psychologically sound skit, to have Hamlet portrayed in an entirely different situation—to have him carried off by his fellow students of Wittenburg to a festive kneip. Then we would see no longer a melancholy Hamlet but an uproarious, convivial one, drinking bumpers with the rest and wishing his father's ghost

back in the shades of Hades. Or we might have a domestic scene from the life of Iago in which he would be surrounded by a happy family, an adoring wife and admiring children. Then we should see a kindly, loving husband and father, romping with the youngsters, the feeling of inferiority gone and with it the malicious trait sunk out of sight into the unconscious. Create whatever situations you like, only make them such as evoke different traits from those which we have been allowed by Shakespeare to see and we would not recognize our Hamlet or Iago, though they would be the same personalities, but exhibiting themselves in different situations. Wordsworth's celebrated "Happy Warrior" might well appear to us in a less admirable light if he had a shrew for a wife, and even Sir Galahad, the noblest and purest knight of the Round Table, might not have appeared so noble if he had fallen under the wiles of Helen of Troy. *Cherchez la femme!*

Personality, in other words, is many sided, one side being manifested in one situation, another in another, and so on. Thus, apparently a person in actual life exhibits contradictory traits, but it is the situations that are responsible for the seeming paradox. It is only when the individual responds in a contradictory way to the same situation that we can be said to have a paradoxical character which, it is safe to say, never exists in real life, but only in fiction.

Popular writers, publicists, politicians and criminologists take a deal of satisfaction in talking about human nature without the least conception of the psychological problems involved. Consequently they generally end in erroneous deductions regarding the probable or improbable behavior of individuals, communities and nations. What I have said thus far has been descriptive only.

Probably not many would agree on a psychological definition of traits and therefore on what should be included in a classification of them. Most commonly, perhaps, traits are defined in terms of behavior. From this point of view a trait may be defined as specific habitual behavior characteristic of the individual in given situations. But if "behavior" is taken in the narrow sense of objective behavior, as is customary, this definition of a trait becomes too narrow.

On the other hand, if behavior is used in a more comprehensive sense, as I think it should be, to cover mental reactions as well as bodily reactions, so that we may speak of mental behavior as well as objective behavior, then such a behavioristic definition becomes adequate. For although it is true that for the most part it is

through objective behavior that traits are manifested and we become cognizant of them in another person, nevertheless in ourselves we recognize a number of mental traits which do not expose themselves to another by our behavior. Many people have sentiments, ideals, desires, aspirations, beliefs, cravings, mental habits (*e.g.*, feelings of inferiority) and other traits in the makeup of their personalities which are only recognizable by introspective analysis in their inner life, or of their behavioristic habits that are now objectively discernible. One reason for this is that such traits are often repressed or held in check from overt expression by other traits; as when ambitious desires are restrained by shyness.

To be sure the impulses of such restrained traits undoubtedly affect and, it may be, determine the attitude towards situations, and the mode of life, habits of thought and feeling, and compensatory activity. And they, also, when activated, find expression in visceral manifestations. All such reactions undoubtedly may be logically interpreted as objective behavior, but the behavior is too subtle for detection by ordinary observation and is open to doubtful interpretations. Any definition of traits, then, should include characteristic activities of mental life that are not obtrusively manifested in objective behavior. And it should be in terms of mental processes that determine behavior rather than of the resultant behavior. From this point of view, *a trait may be defined as an habitual mental reaction characteristic of the individual to an actual or ideal situation.* This definition would exclude simple habits which are little if anything more than conditioned reflexes (such, for example, as the common habit of smoking a cigar or cigarette immediately after meals: acquired tastes for food, odors, etc., customs, habits of manners, etiquette and dress and a hundred and one other simple habits of everyday life). On the other hand—and let me emphasize this point—it would include and give full weight *to repressed subconscious desires, aversions, apprehensions, etc.*, that through conflict or otherwise and by various mechanisms may be regarded as the determinants of what, on the surface, so far as consciousness is concerned, is apparently unrelated behavior. Repressed subconscious desires, etc., by whatever behavior they may be manifested and by whatever mechanisms, are just as much traits as conscious desires and their behavior. This conception of a trait is a more fruitful point of view, as we shall see, for a study of mere behavior can tell us nothing of the Why—of the structure of personality and of the motivations that determine one mode of behavior rather than another. As a method the latter, it is true, is the only approach to

the objective study of behavior. But that does not negative or belittle the fact of there being conscious traits not open to this method.

Now, one characteristic of traits is that they are obstinately persistent, enduring, otherwise they would not be habitual and characteristic of the personality. This does not mean that traits are necessarily everlasting throughout life, or that they cannot be modified or eliminated in accordance with new experiences and replaced by others of even an opposite character with corresponding changes in the personality. The traits of childhood give way to new ones during adolescence and these in turn are replaced by those of the adult, though it is not uncommon for some to persist throughout life.

As an editorial writer, discoursing on the heroism of John D. Rockefeller, Sr., in revisiting the scenes of his youth remarks: "The libraries are full of books relating the sad experiences of these seekers of youthful memories. There is the amusing 'Conrad in Quest of His Youth' for example, in which the hero falls asleep at the critical tryst hour [with a former love of his early years after having disappointedly sought out the companions of his youth only to find them all changed in their personalities]. There is an old poem 'Twenty Years Ago' in which the pilgrim is disillusioned. The boy and girl friends of school days develop so strangely, and in looks, talk and act are so different from what they were! Even the sweethearts of youth seem to have changed for the worse! The gods of youth are simply not the gods of later years. In extremely old age, there is more likely to be a reawakening of the old fondness for childhood haunts, but it does not usually induce a visit. Mr. Rockefeller distributed dimes to those he met. Most persons would not consider the experience worth two cents."

These considerations bring us to a second fundamental characteristic of traits, namely; most traits of personality are *acquired*, acquired by experience. This was obviously the case with the sentiments and habits and ideals and aspirations of Bismarck and Lincoln, though they derived their drives from the integrated primitive basic urges of their personalities. This second characteristic of traits I will return to later, merely remarking here that by technical psychological methods traits can be artificially modified or eliminated and others newly created, with a corresponding modification of the personality. This is the goal of psychotherapy. Nevertheless, until such modifications occur, effected under the influence of new experiences of everyday life,

or education, or psychotherapy, traits are enduring and the personality persists unchanged.

Why do traits thus endure? And why do we have them at all? And why should we not be the sport of our environment from moment to moment? What makes our personalities stable, consistent things within certain limits? If traits are mental processes why can we not change them at will and so change our personalities—change our sentiments, our prejudices, our ideals, our attitudes and feelings, as we can change our thoughts from one topic to another, or change our clothes? This is what fiction writers make their characters do, and what old fashioned penologists and sociologists thought they could do to reform the wayward, the delinquent and the criminal. Think and wish as we please our personalities remain as before. No account limited to behavior can give an answer to this question. It is an important question for it is the key to the problem of personality.

To my mind the most satisfying theory, to which I am forced by long continued observation and studies, is that of "*Integration of Dispositions.*" According to this theory traits depend upon the organization of inherited and acquired psychophysiological dispositions. That is to say, they are the functioning of organized integrates of such dispositions. Dispositions? What are they? They are "tendencies" of something, of course, but of what? You never heard of a "tendency" off somewhere in space without its being a tendency of something. Alice said that she had seen a cat without a grin but never before she came to Wonderland had she seen a grin without a cat. We must go to Wonderland if we would see a disposition without its being a disposition of something. Inherited dispositions, admittedly, are tendencies of preformed physiological arrangements of the nervous system. Acquired dispositions must be tendencies of conserved experience. For my part, I cannot conceive of experience being conserved in any way excepting as physiological records. This is the theory of memory. Physiological, because it is impossible to imagine such records to be mental. For how can a mental experience be conserved as such and where? For my part by no flight of the imagination can I conceive of a mental experience persisting as such but neither a state of consciousness nor co-consciousness. To call such a past mental experience a "disposition", or to regard it as a mysterious psychical something having a disposition to function as a conscious process seems to me a mere figure of speech or playing with thought. Let us call a spade a spade and speak of acquired dispositions as physiological, created and organized and

integrated by experience. I have called such dispositions "neurograms". How the activation of them is accompanied by, or manifested by, correlated mental processes is the old mind-body problem which we need not go into.

If this be so, then personality is a structure as much as is the brain and spinal cord. But the important difference is that the structure of the latter is innate and inherited, while that of personality is in part inherited as primitive instinctive dispositions and for the most part acquired through experience. Personality, if I may quote from my previous writings,[1] may be considered "*as a composite structure built upon a foundation of preformed, inherited psychophysiological mechanisms (instincts, etc.,) by experience.*"

The inherited mechanisms, of course, are the instinctive dispositions. (Whether they be called instincts or chain-reflexes or by some other name does not matter, it is only a question of terminology which depends upon what is held to be connoted by the concept of instinct.) The point of importance is that the behavior of the infant (aside from that of simple physiological reflexes) consists wholly of responses to the environment of these inherited dispositions. It is little more than an instinctive and reflex Robot. But—and in this our infantile Robot differs from a mechanical Robot — as it comes in contact with the world it acquire experience, and this experience modifies the specific responses of the inherited instinctive mechanisms to specific situations. Every biologist agrees to this. From the first peck of the chick, whether it hits the grain of corn or misses it, its pecking mechanism is conditioned, modified and controlled by the experience of pecking. And likewise with the human organism "the instinctive behavior of the individual becomes conditioned, modified and adapted by experience to the specific situations of the environment. Necessarily these modifications of the workings of the innate mechanisms by the imposition of experience upon and within them become very complicated and the problems of instinct and experience thereby evoked have been the object of much study and debate."

But how can the organism, whether a chick or a human being, "acquire" experience? How can a past experience that has come and gone determine the character of a future experience? Here, too, every biologist accepts the theory that what is acquired is "dispositions", that an experience tends to leave in the nervous

[1] The Structure and Dynamic Elements of Human Personality. *Jour. of Abnormal Psychology*, December, 1920. *The Unconscious*, 2d Edition, Chapter XVII.

organization "dispositions", which become integrated with the instinctive dispositions and thus form a functioning whole in respect to the specific situation. The instinctive impulses are accordingly modified by the acquired dispositions.

All this is elementary enough, you will say. Quite so; yet it is worth while to recall it here because it is the fundamental principle underlying acquired traits of personality. For "there is a body of evidence which leads to the conclusion that upon the innate mechanisms as a basis, the composite structure of personality is built up by experience.

"By experience new 'dispositions' are deposited (*i.e.*, acquired), organized and systematized, not only amongst themselves but integrated with the inherited mechanisms. Thus are formed new structural mechanisms which in their functioning manifest themselves as those mental processes we call traits. Furthermore, on the one hand, the instinctive mechanisms are conditioned and brought under control by experience and, on the other, mental processes acquire an extra driving force from the impulsive forces of the integrated instinctive mechanisms. This conception, which we owe to McDougall, I consider of great importance for an understanding of traits in the growth of the mind.

"Accordingly, we may say, as a final analysis of traits: *Personality* is the sum total of all the biological innate dispositions of the individual and of all the *acquired* dispositions and tendencies—acquired by experience. And it is limited to these.

"The former would embrace the emotions, feelings, appetites and other tendencies manifested in instinctive reactions to the environment; the latter the memories, ideas, sentiments and other complexes of intellectual dispositions acquired and organized within the personality by the experiences of life.

"The integration into one functioning organism or whole of all these innate and acquired dispositions, with their mechanisms and inherent forces by which they come into play, is personality."

As to the mode of this integration "it is well recognized that the acquired dispositions are, by the very experiences by which they are acquired, organized into complexes and systems of complexes which are conserved as such in the storehouse of the unconscious.[2] By such complexes are meant habits, sentiments, ideals, beliefs, prejudices, including their roots, settings or meanings, systematized thoughts, etc.; in short systematized experience in almost any domain."

[2] *The Unconscious:* Lectures ix and xv.

Many of these become traits that characterize the individual and determine his reasoning processes, his feelings, his attitudes; in short his reactions and his behavior in specific situations. For they have not only an organized structure but possess a dynamic potentiality, a drive, largely due to the fact that within the complex are incorporated one or more emotional or other instinctive mechanisms from which its chief, but not whole, energy is derived.

The important corollary of this theory of dispositions is that we should not look for the springs of human behavior to a single vital principle such as the urge of a libido or an élan vital or other metaphysical entity, but rather to the motivating energy derived from and inherent in the different inherited (instinctive) dispositions and the many multiform, integrated and organized systems of acquired dispositions created by the experiences of life.

A second corollary is that personality is a synthetic product much as coal tar derivatives, or other chemical compounds, are synthetic products, of which the properties are determined by the number, combinations and configurations of selected elements.

A third corollary is that any personality theoretically can be modified or reconstructed or transformed into another synthetic product with traits corresponding to the new synthesis.

We should throw into the discard of pedantic jargon or metaphysical psychology all such notions and terms as libido, regression, projection, introspection, inversion, introversion, extroversion, transference, fore-conscious, ego-instincts, transposition, displacement, fixation, and the like, and return to the sound and common sense concepts and a nomenclature of straight psychology.

What is needed to-day is a "debunking" of abnormal psychology. This unpopular task awaits a qualified exponent of scientific methods.

It is a common popular aphorism that human nature cannot be changed. And on the basis of this pessimistic proposition the cynically minded criticize all attempts to outlaw war and to modify the asocial or illegal behavior of groups of the community. The proposition is true if human nature is limited to the primitive instinctive urges with which every child is born. But it is not true if human nature is taken to include personality through which those urges manifest themselves. Personality can be changed by modifying, reconstructing its traits and organizing new ones by the creative force of new experience. This I have done time and again, and I believe my colleagues have done so also. I venture to say that Dr. MacPherson, Dr. Waterman and others will testify

that on the basis of these principles and by these methods they have equally successfully reconstructed personalities, sometimes with dramatic results.

It is obvious from this theory of personality why we have traits, why traits are so obstinately persistent and why they cannot be changed arbitrarily at will. Having a structure of integrated dispositions, brain "patterns"—to use the terminology of the day (but a concept formulated by Descartes three centuries ago)—created and organized by experience into complexes and systems of complexes, they necessarily persist, unless erased by the corroding effect of time, until modified or transformed by new experience. But as they must have wide, ramifying roots and settings in dispositions left by experiences of the distant past, often reaching back to childhood, and conserved, perhaps as cravings, in the unconscious beyond the reach of awareness, the new modifying experiences, whether educational, therapeutic or those of everyday life, must, to be effective, create new roots and settings that will construct new meanings, new points of view, new habits, new attitudes, and provide new cravings and drives.[3] Such modifications result in new brain patterns, new structures—which mean new traits or the elimination of old ones.

For these reasons and on these principles, the physician, who would adjust his psychopathic patient to the situations of his everyday environment; the sociologist, who would reform the asocial behavior of the maladjusted delinquent or criminal and substitute traits that conform to the demands of the social organization, knows that he must reorganize, modify, reconstruct the dispositions that underlie the traits of each. And until this is done, he knows that all efforts at reform will be useless. And likewise the experienced statesman knows that until he has created new sentiments, changed the habits of thought, the traditional attitudes of mind, *etc.*, of the people, and thereby public opinion, any proposal of reform will fall on deaf ears, even though it be the abolition of war and preservation of world peace.

"You're nothing but a pack of cards!" exclaimed Alice as she awoke from Wonderland. Perhaps she might better have said "a pack of Robots!"

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[3] *Cf.* Chapter I, *The Rôle of Meaning in the Psychoneuroses.*

THE ORIENTATION OF CONDUCT DISORDERS *

By IRA S. WILE, M.D.

CONDUCT disorders are usually described by their symptoms. Many difficulties arise in determining the lack of adjustment responsible for the symptomatic expression. Lying, stealing, tantrums and truancy, quarrelsomeness, gambling, running away from home, seclusiveness, disobedience, fantasying, sullenness, fighting, somnambulism, loquacity, auto-erotic and other sexual practices, fears, depressions, indolence, late hours, abusiveness, and the like are presented as problems whose causation is to be sought. The mode of treatment theoretically is based upon a diagnosis of the relationships between the symptom and the underlying cause. Quite generally the adequacy of the diagnosis is judged in terms of the success of the treatment applied.

It is admittedly difficult to determine many of the underlying causes with accuracy and to have a complete understanding of the workings of the treatment undertaken. It is, therefore, frequently unsafe to conclude that the mode of treatment per se has been efficacious; nor does successful treatment attest the sole truth of the theory upon which a causation has been established and the treatment instituted.

Numerous theories account for human behavior. Some are narrow and definite, others are broad and vague. The varieties of methods employed for the treatment of deviations from alleged norms of behavior are exceedingly numerous. It is undeniable that many students and observers are reporting excellent therapeutic results by the utilization of different procedures based, indeed, upon exceedingly different theories of causality. The very variety of theories and procedures alleged to bring about so many favorable results raises a problem for solution. With multiple approaches to similar problems and a high degree of similarity in end results there must be some continuum in human lives which may be effected by a vast variety of impinging stimuli. Disregarding many assumptions made on the basis of meager and inadequate experience, it is fair to point out that problems of behavior today are being attacked from the standpoint of neurology and endo-

* Read before the Fifth Annual Meeting of the American Orthopsychiatric Association, February 24, 1928.

crinology, special theories of psychogenesis as presented by Freud, Jung, Adler and others, from the viewpoint of environmentalists, sociologists, behaviorists and the like. A psychiatric approach and a physical attack upon a problem are not identical, though practically they have a common element. There must be some element common to all successful technics. The very multiplicity of available procedures suggests the possibility of some common element perhaps in the totality of human function. Is there, perhaps, some essentially vital equilibrating force which may be approached from any one of a number of angles? Is it possible to orient conduct disorders in such a manner as to disclose the best approach to the core of the problems and the most effective leverage towards normality in conduct and behavior?

It is obvious, for example, that the administration of arsphenamine and mercury, or the administration of a high vitamin protein diet, or the administration of thyroid gland, or the adjustment of school placement or the finding of a proper foster home might be serviceable to treat such a symptom as stealing in an undernourished, dull, syphilitic child. And the use of each of these procedures can be justified. The arsenic and mercury may be regarded as specific but all of the procedures have a common moiety to the extent that all give attention to the child. Very frequently, however, the administration of specific medication for syphilis will not cure the boy's stealing, nor his failing in school any more than will the finding of a foster home cure syphilis.

An adjustment in school placement will not suffice to relieve irritability due to malnutrition any more than rural placement will cure theft due to underlying diabetes. When multiple approaches are made regardless of theory which is the factor that is most useful. Is it just to claim corroboration for a theory when treatment involves extraneous therapeutic procedures? Some orientation of conduct disorders is necessary to determine the general nature of each disorder, its possible causation and the most helpful mode of approach.

There is a wide difference between the observation of phenomena and their interpretation. Interpretation becomes more difficult when one attempts to think in terms of causality and relations. Even in the presence of conditions easily recognized and known full interpretations are not yet possible. To feed thyroid gland to a cretin yields ample evidence of the fact of improvement, but there is little information to indicate the why and wherefore of the improvement in growth and mentality save in terms of the further statement that the thyroid gland provides some substance

essential for growth and development in which the cerebral powers share. Knowledge concerning heat and humidity, even the observation of their effect upon persons unaccustomed while giving facts does not reveal such facts as might be ascertained by inquiring into the relations of the variations in heat and moisture to the heart rate and blood pressure. Even knowing the effect of heat and moisture upon the circulatory system does not explain just how and why the action takes place nor the relation between the physiological effects and the psychologic responses. A large part of our discussions about fear, even with increasing knowledge concerning its physiologic and psychologic reactions, does not indicate all the elements entering into its causation nor offer a cogent reason for susceptibility, nor explain the relations of any fear to internal and external phenomena.

A single cause may produce multiple effects when acting upon different mechanisms. Fire introduced to a gas log, to gun powder, to shavings, to hydrogen and to carbon monoxide presents somewhat different phenomena. Such a trifle as stepping on some person's foot may produce a variety of phenomena dependent upon whether the incident occurs in the subway or on a ballroom floor, whether it is the act of a rough, uncouth man, or a young, graceful damsel, and whether, indeed, the stepee is wearing new shoes or old ones. In a sense stepping is the only common element in the total stimulus; the other qualifying elements may be more evident in the resultant response.

A single effect may be produced by multiple causes, and to this extent the problem of determinisms is complicated. Lying, for example, may result from a feeling of inferiority or superiority, from an effort to escape from the unpleasant, to safeguard another's honor, to release the self from a sense of sin and guilt, or to appear more worthy of social esteem. And lying may be due to some toxic drug or inflammatory condition. Thus it may follow the use of hasheesh, or result from an attack of encephalitis. Orientation, therefore, again is suggested in terms of possible cause and effect, or in terms of specific or general relationships.

In the past numerous methods have been employed to secure information concerning the nature, time of occurrence, expression forms and outcome of types of behavior earlier or later classified as normal or abnormal. Investigators have freely utilized questionnaires and biographic methods in order to secure data. Reasoning has been directed from the event to the past life and numerous methods of approach have involved reasoning backward with a sense of confidence that this mode must necessarily be correct.

Even in evaluating the symptoms represented by the conduct disorder; the clinician reads his judgment into his clinical evaluations by considering successive phenomena of seemingly related action as outgrowths or foundations and he finally reaches a conclusion regarding the fons et origo of the behavior disorder. The fact that a similar past history does not always obtain for similar behavior disorders does not disturb the judgment of the one having sublime faith in his own a posteriori analysis. It is not as easy to draw conclusions concerning the underlying pathology of lying or pilfering as it is to judge the pathologic elements in lobar pneumonia or typhoid fever.

A more important mode of orienting involves the observation of special groups of children with other groups not presenting identical behavior reactions as controls. While this represents a step in advance to the extent that one may manipulate environment, it does not suffice for complete judgments. One disregards the part that hereditary and social problems may play in determining physiologic and psychologic reactions. Under some forms of experimentation one secures more definite information. Such studies for example, as Helga Eng's "Studies of the Emotional Life of the Child", or the experiments of Watson or Koehler, have sounder bases, but even these depend upon the interpretation of the observed phenomena. Thus there may arise wide differences of opinion, frequently diametrically opposed to earlier judgments upon identical phenomena. The varying schools of psychoanalysis illustrate this tendency to distributed opinions upon the same phenomena though many doubt that psychoanalytic studies are to be regarded as truly scientific experimentation.

Numerous discussions of conduct disorders are based upon quantitative measures. As norms of behavior are, in a sense, mathematically determined, statistical computations may be deemed to have reasonable worth. There is doubt, however, as to the value that can be given to numerical tabulations and statistical manipulations of facts for purposes of interpretation. The experience of the past fifteen years with reference to the relation of intelligence to various forms of crime and delinquency indicates some of the dangers of statistical inquiry. Feeblemindedness once regarded as accountable for a vast number of abnormal social phenomena today is regarded as more or less subordinately related to most of them. Tabulations of the number of defects per child or even the scales of age, height and weight are instruments to be utilized cautiously at all times and most particularly when an individual child with some abnormal behavior is being studied.

For many years there has been a growing tendency to reach into conduct disorders by means of hypotheses. This mode of approach is most dangerous when the hypothesis is forgotten and the assumptions are translated into facts and all conditions are obliged to conform to a confined system of organized thinking. For every hypothesis now existent substitutes may be formulated into systems that will equally account for human actions and reactions, but this does not indicate that the fundamental premise underlying the system is valid. Study by hypotheses is exceedingly valuable, however, in so far as it opens up new lines of thought and experimental methods, suggests new modes of approach and stimulates thinking concerning mechanisms whose existence and mode of action are assumed.

Another mode, which all too frequently serves as a test of validity is the cure test. To seek to demonstrate the truth of most theories on the basis of cures, especially if viewed numerically, is irrational, unless one possesses full knowledge concerning all the factors at work. It was such assumptions of arithmetical value that made popular Perkinism, established homeopathy and created supporters for numerous schools of faith healing and pseudo scientific cults. The orthopsychiatrist cannot safely draw absolute conclusions from the successful termination of conduct disorders of children when his technic involves the manipulation of many elements in the environment, the purposeful shifting of internal attitudes and responses and also an attack upon the physical organization of the child.

How far then are we justified in drawing conclusions? Are we not admittedly still in the fact-finding stage? Should not great caution be observed in establishing conclusions? With the same types of factors presented by different children the solution of a seemingly identical difficulty may be secured by dealing with some one specific though different element which, for the time being, appears to dominate the situation. The conduct disorder to this extent is oriented in terms of apparent specific influences.

One recognizes that there are definite elements tending to make behavior difficulties acute, episodic, or chronic. We observe variations in behavior as the result of what we term projection and introjection. We note activities that may be classified as conscious and readily explainable, and those arising from the unconscious with rationalized motives or motives unknown. We at times interpret behavior as merely an antisocial reaction to some antisocial stimulus. We note innumerable incapacities and varying expressions of life in the physical, intellectual, emotional and social realms.

The organized mechanisms involved in the physical, intellectual and emotional sphere are primarily biologic in nature; whereas the social reactions are primarily based upon social patterns, principles and persuasions. The judgment concerning conduct disorders depends upon time, place and circumstance which lie behind the social norm of behavior. Those reactions which are in harmony with the group norm are termed normal reasonable behavior, permitting an adequate coefficient of deviation. Abnormal reactions are deviations from the group norm and are dependent in part upon some peculiarity of the social stimulus or to some variation of the internal reacting mechanisms. Whether the difficulty arise in the realm of cognition, affect or conation, the end result may be the same. And, indeed, the very fact that there exists variations in stimuli, receptive mechanisms, associating mechanisms, thinking, feeling, and acting mechanisms, points out the necessity for a wide appreciation of factors entering into conduct disorders.

I am suggesting a plan for orienting conduct disorders in terms of relationships, recognizing that the plan as suggested presents many weaknesses and difficulties. It will serve, however, to bring out more clearly the relationships that must be considered in the interpretation of problems of behavior.

To talk and to think solely in terms of biology, or endocrinology, or sociology, or psychogenesis or the like presents a serious limitation of viewpoint. To interpret adequately a single action such as Johnny runs away from home, or Harry hits Martha, involves a vast amount of data. The manifest content of the fact is frequently clear and superficial. It is the latent content which is important and this can be derived only by an appreciation of the whole child in its entire setting. It is the recognition of this child in a setting which constitutes a first step towards orientation.

Let us consider a large sphere in whose enclosing perimeter there is found all of man's natural environment. It is the external realm of nature containing all that belongs to climate and topography, to flora and fauna, to astronomy, meteorology, and physical geography. It exists regardless of man with its profound forces working ceaselessly through mountains and valleys, springs and deep oceans. Here lies man's greatest challenge to activity—his universe for conquest.

Within this large sphere let us consider another sphere made up of a mycelial lace work of relationships and termed society. It is man's social environment. It is constituted and expressed through law and government, economics and education, traditions

and mores, ethics and organized religion. It is a social environment that determines cultural levels and social heritage.

But in these two realms, man as an individual, does not appear as an entity. Let us conceive man as a protoplasmic mass existing between his natural environment and his social environment and projecting himself towards each, though with greater and freer ameboid activity entering into and circulating in the social environment. This man is then naturally at the same time, a biologic and social creature. His biology is permeated by his willing and unwilling acceptance of social relations and his social self is conditioned and modified by his biologic constitution and organization.

This biologic man contains physical, intellectual and emotional systems and mechanisms, but his biologic self is more than the mere agglomeration of these elements. It is possible, for example, to consider man biologically in terms of his neuron patterns, his endocrine systems, his viscera, his physique, his conditioned reflexes and the like. One may also view man in terms of his intelligence, his creative imagination, his power of fantasy, his relative abilities and disabilities. One may analyze man in terms of his conscious and unconscious emotional life, his emotional drives, urges and goals and in relation to such theories as those of Freud, Adler, Jung and others. It is, however, the sum total of the interactions and interdependence of the physical, intellectual emotional life that constitutes man as a biologic reacting system, but he is at the same time an integrated biologic social organism.

In a sense, the individual is trying to utilize society as a lever on environment for his personal benefit both biologically and socially, while society concomitantly is using man as a lever on the entire environment for the benefit, advantage and protection of the social group.

The possibilities of social and antisocial conduct are partly determined by temporospatial influences upon man's biologic and social phases. Each individual can project himself towards and into any one sector of the social sphere in which he finds himself. And this is essential for his recognition of the existence of the group. The sum total of the individual projections constitutes each man's social interest and the sum total of all the relationships thus established creates and modifies the common values of all men and thus establishes the norms of human behavior. Each individual is, in a sense, reasonably free to enter more or less thoroughly into social thinking and acting or to withdraw completely from it as a whole or from any part of it.

It must be obvious that biologic structure and function cannot

be independent of social relationships; and that biologic reactions result from social stimuli just as readily as social reactions may be determined by internal biologic stimuli.

I am suggesting the necessity for a more thorough analysis of the biologic and social elements entering into behavior in order to orient conduct disorders. The fact that man in his biologic and social existence possesses such a vast variety of relationships makes it patent that a large variety of approaches may be made which will affect his integrated activity. It is for this reason probably that many different workers with varying viewpoints are securing excellent results. This mode of orientation is advantageous, moreover, to establish first lines of approach in terms of practical needs. If diabetes is the entire basis of a conduct disorder, it would appear unnecessary to attempt an immediate mental analysis. If an idiosyncrasy to summer's heat provides a reason for violating social codes there would be little reason for a foster home or the administration of thyroid gland. If a brain tumor is the basic element of tantrums obviously mental catharsis, the release of a mother fixation, or exercise for pronated feet would be of little value. If home pressures, brutality and unwise social pattern appear to be dominating the behavior situation, to what extent is it advantageous to correct myopia, malnutrition or autoerotic practices?

Behavior is the expression of adjustment to relationships. Some of these originate spontaneously within the human mechanism in response to biologic stimuli but the major group of behavior difficulties appear to rise from conflicts between man's biologic and social organization. For both groups it is advantageous to ascertain wherein the predominant responsibility lies.

I regard this viewpoint as helpful from the standpoint of diagnosis and for the determination of the most promising therapeutic approach. Treatment allocates the general problem theoretically in relation to the various forms of activity that are derived from the biologic planes.

I am speaking, of course, from the standpoint of the practical treatment of the problems of children rather than expounding a new theory to account for their multifarious activities.

HOMOSEXUAL PRACTICES OF INSTITUTIONALIZED FEMALES

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TO institutionalize individuals solves the problem of society temporarily, but this does not mean that once the individual is institutionalized he offers no problem. Even slight acquaintance with institutions shows a multiplicity of difficulties, one of the most universal of which is inmate homosexuality. Obviously enough all the inmates are not involved in these practices, and there may be institutions, such as homes for the aged, or for children, where they do not exist. But usually a significant percentage of any institutional population is engaged in such practices. These do not go unnoticed by the persons in charge, but despite efforts, often drastic, to curtail such activity, it persists in varying degrees and numbers. Because homosexuality is against the rules of the institution, it is carried on semi-secretly and no true statistics of its frequency can be collected. We cannot know, then, which type of institution has the greatest numerical problem, but in female institutions of the corrective type there are enough cases and enough ado about them to warrant some serious consideration of the problem. This statement is not meant to imply either a greater frequency or greater problem in female institutions but simply that the attitudes toward the problem justify its study.

Such studies are very few, however. In fact, but one that is directly concerned with this problem has been located, and in this Dr. Otis was concerned with but one phase of it, the colored and white girl relationships. Her study was conducted in one of the eastern states' institutions and describes conditions not unlike the ones that have come to the writer's attention in an entirely different location and fifteen years later. The colored relationships, the martyr feeling, the notes, the sexual significance, and the jealousies have all persisted. That the attitudes of the institutional heads and the same ineffectual means of meeting the situation have also persisted is both interesting and sad.

There has been considerable work done in the field of female homosexuality by such men as Ellis, Krafft-Ebbing, and others. Their work, in the main, was with different sorts of cases than the

ones described in this paper. The condition they describe is truly pathological, usually superimposed upon a neurotic constitution and represents the sexual desires of a lifetime. The conditions are not the same for the institutionalized and they represent a sort of temporary or pseudo inversion. There are occasional references to this sort of thing in most of the books concerned with sexual pathology. A few of these, which are easily accessible, are listed in the appended bibliography. These references are not directly applicable, but are concerned with similar artificial conditions as in girls' schools or convents.

The following data were gathered in three main ways: (1) by observation of the inmates; (2) by contacts and interviews with the inmates before, during, or after their term, and (3) by interviewing the officers in charge of the institution. They are concerned largely, but not wholly, with one institution, a corrective one for female delinquents. Many of the inmates are retarded in mental development and some are actually feebleminded. As in most institutions of this type, the inmates are there mainly because of immorality, oftentimes coupled with other delinquencies as stealing and incorrigibility.

"Friend" is the term applied to those engaged in homosexuality. It is a generic term, and when a girl talks of her "friend" the only other question is concerned with the type of degree of homosexuality, which ranges from note passing with attendant imaginary homosexuality to mutual masturbation and cunnilinctus.

"Friends" are a sort of tradition in the school and have been a part of the order of things as long as it has been established. When a new girl arrives, she finds these "friendships" everywhere. She is approached by one or more of the girls in her cottage who ask which side she is on, the matrons' or the girls'. Upon her answer depends her future social plane. If she says she stands with the girls, she is tested in many small things, and then if she bears out her statement she becomes a candidate for a "friend". There is a sort of fraternity among the "friends" and those inmates who are not within the circle move on a different social plane and there is no voluntary community between them. Seeing this, it is not unusual that a new girl lines up with the "friends" and attains the popularity she craves. But entering the ranks is a voluntary matter and force is not brought to bear—if she chooses to remain out, she is let alone. If she chooses to stand with the girls, notes are circulated over the institution telling of the new girl and suggesting that someone make a "friend" of her.

A "friend", whether or not she is a new girl, is attained in a

simple manner. Ordinarily, no long courtship is carried on, but there is simply a note written, telling that the "friendship" is wanted. The recipient, with the advice of others in her cottage, decided what she wants to do, and writes an answer if she accepts the "friendship". That is all there is to it, and the "friendship" is on. No attempt is made to limit one's self to one "friend"; in fact, it is part of the game to have more than one, if she can. Some girls have a "friend" in every cottage, including their own. Nor is the color line drawn. It is quite the thing for the white girls to have "colored friends" and only the "best" girls rate such favors. By "best" is meant those who lie best, stand up for other inmates best, and are most successful in breaking institutional regulations. Colored girls have not only "white friends" but colored as well. "Cottage friends" is the name of those who live in the same cottage.

The simplest type of "friend" association consists mainly in note passing and imaginary homosexual relationships. These notes are the slushy love note type of thing, filled with adolescent terms of endearment. They are passed from "friend" to "friend" by other inmates who happen by on errands. The relationship between the "friends" is usually husband and wife. That is, in the notes they pass one assumes the rôle of husband and the other of wife, and for the duration of that "friendship" that relationship holds, but the assumed rôle is not always the same for each person in other "friendships", either concurrent or subsequent.

Illustrative of style and content, the following notes are presented. They are uncorrected copies of actual notes passed between a colored girl and a white girl. The colored girl's note is presented first:

You can take my tie
You can take my coller
But I'll jazze you
'Till you holler.

My dearest Wife Gloria:—

"I am writing to you because I have not writen to you for so long and sweet heart you will have to forgive me but I love you just the same; that handchief that you sent me is to pertty to use and I am going to take it out with me when I go. Honey If you love me you will brake out your dam door and come an sleep with me and angle face if I could sleep with you I would not only hough and kiss you. But I will not take the time to write it for I guess you can read between lines. When I kiss you I thought I was in heaven and I was kissing one of the angles, up there if I were in cuba and you in spain the love I get for you will make a bool dog break his chain, and I don't care what you use to be but I know what you are to day

if you love me or I love you what has the world to say. You ask me no questions so why should I. I don't care what you use to be but I know what you are to day. I love you and you only.

x o x o x o x o x o x o x o x o x o

from your love husben

Ocean love to my wife Gloria Love.

The white girl then answered with this note:

Land of Friends
St. of Happiness
Date—Hot Lips.

My dearest and Only husben Oscean:—

As I have time I will answer your seet love note that I get last night. Honey babe I sure do love you and you only and they had better lay off and I don't mean my be eather. You looked so sweet yesterday at the laundry. Sugar dady if I could sleep with you for one little night, I would show you how much I hontly and truly I love you. You are the only girl I have ever loved and the only one I ever will love if you go out before I do I will not have any friends for I am true blue to you and you had better be to me. Honey if you love me as much as I love you you will wate for me to night at the doorr. After the other girls have gone and I hope you will, for honey I sure do love you and you only and I want you to unstand it to. You are the first "Hill" friend I have ever had and the only one I entand to have for I love you, if you love me you will go to the Hospital for somethig for I go every morning, did you see me this morning in school. I saw you. Honey you are the sweetest thing I every lad my eys on. Will sweet heart, I will close for this time with all the love in my heart and all the kiss on my lips for you and you only. *C.*

From your loving wife, Gloria Love to my
Dearest husben Oscean Love.

One of the curiosities of these notes is the heading. Not all the notes carry such headings but many do. It is a perversion of the usual address, place, date, idea, as may be seen from the following samples taken from other notes:

You can take my collar,
You can take my tie,
But I love you until you die.

Lovers' land,
Box of kiss,
Date get you at last.

State Please be mine,
Date I love you,
Box Lonsome for you.

Please forgive me,
Broken hearted,
I want you back.

The notes are usually written in their rooms at night. The paper and pencils are stolen from the school rooms or library, or

cut from the margins of books and magazines. Girls who are in the school steal the material by tucking it under their brassiers in such a way that it lays flat and escapes notice. Once in their cottage, they pass it out to other inmates. The notes are kept much as the proverbial lover treasures his letters. In this particular institution the window and door casings are not tight against the walls. These and similar spaces behind shelving become the depositories for both notes and supplies.

Not only are notes passed from "friend" to "friend" but also favors or presents. Ties, toiletries, handkerchiefs, and particularly brassiers, are the usual favors. The brassiers are made by the girls themselves and represent considerable work oftentimes. They are usually heavily embroidered, with love messages, nicknames, or initials. Such favors are often the means of detecting the pair, but even so, they pass about in a secret way.

With cottage "friends" the relationships are not so imaginary. Because they have access to actual physical contact, they resort to it rather than to notes and favors. Although cottage "friendships" do not imply a more perverted contact than loving, petting, kissing, etc., other practices as mutual masturbation and cunnilinctus do exist with this group. Here, too, we find the husband-wife relationships in existence. The rôle of husband is the more aggressive one. Generally speaking, such contacts are not made between noncottage "friends", but at times, when they are playing or working together, and the attendant is lax, it will happen. Among the girls the actual perversions are called by the initials of their slang names.

In all the relationships the sexual side is stressed. The girls think of themselves in the rôle of husband or wife or some other familial relationship. By this is meant that a particular pair will accept others into their fold as "children". These "children" enter into the "friend" fringe by writing notes to the other "children" and the "parents". Thus the "friendships" become very much involved and lead to the jealousies that can be expected.

Earlier it was pointed out that more than one "friend" was the usual goal. But though this is the goal, it is not carried on openly. When the "friend" finds she has a rival, it often leads to rather violent fights between the girls. These jealousies are even more real than the husband-wife jealousies of the everyday world and result in fist fights, hair pullings, trumped-up stories that put the rival in punishment, and every other conceivable type of trouble making activity. At times the rival does not present her best defense because punishment over a "friend" is another way

of gaining favor with the girls. In general, greater oppression results in keener desires.

Oddly enough, "friends" are not always defended. For example, A and B are "friends". A is about to be placed out and receives a farewell note from B. Instead of treasuring this last note, she may put it in the matrons' hands as a magnificent gesture of her trustworthiness. On the other hand, A may send B a farewell note, in which case B may turn it in to the matron so that A will not be sent out. Sometimes the latter plan breaks the "friendship", but not always, and the chance is taken.

From the point of view of duration, it is interesting to note that noncottage "friendships" persist longer than cottage "friendships" and that the relationships not involving physical contact are more durable than those that do. Room partners are rarely, if ever, chosen as "friends", and if by chance cottage "friends" are unknowingly assigned to the same room the relationship ends almost at once. It seems rather clear from this that the element of danger must be operative for a continued "friendship", and it is equally clear that the "friendships" are not the type that will bear close association over a period of time.

Other means of communication than notes and favors are operative at times. These are such things as scratching the "friend's" initials or a silly love message on themselves so they will leave a scar, or allowing themselves to be bitten by the "friend". At times these methods have been a matter of serious concern to the authorities, but they come and go and applications of strong iodine solutions prevent many recurrences. Then, too, there is an intricate set of signs for conveying messages. The way the hair is worn, the color of tie or hair ribbon, a certain wave of the hand, or some peculiarity of gait, each has a particular meaning to the "friend".

Remembering that these things happen in an institution whose inmates are there primarily for sexual indiscretions, it does not seem unnatural that they should happen. Sex has consistently played a part in their lives; the fact that it was anti-social probably lent some zest to the situations. To some degree, they found these experiences pleasurable, and among others of the same kind they even find them glorified. Finding no heterosexual outlet for their sexual desires, it is most natural that they should turn their attention to the possible homosexual experiences. It is a sort of sublimation for a learned behavior pattern that has been thwarted. Supported by imaginative reproductions of previous pleasures,

these "friendships", even of the nonphysical type, serve as a sublimation.

That these girls are not truly inverted is evidenced by the lack of fidelity, the ease with which the friendship is broken by close contact, and the fact that they do not persist in homosexuality after their release from the institution. Now and then actual neuropathic inverts may be found in the institution, but they are likely to be in even smaller percentage than in the rest of the world. This because homosexuals are not molested by the police so often for obvious reasons.

Throughout this discussion two main trends are seen to pervade the practice: first, sexual sublimation, and second, breaking rules. If this is as true as apparent, it would seem that the practice could be better controlled by affording socially acceptable sublimations and less attention to the efforts of repression. Treat it much as masturbation should be treated: neither forbidding nor encouraging it, but supplying the person with tiring, interesting activities and a maximum of social contacts. This would probably lead to an increase in its incidence temporarily, but eventually it could be expected to dwindle. The principles underlying the suggestion are the same as for any other reform, sublimation by positive measures rather than repression by negative ones.

BIBLIOGRAPHY

Block, Ivan. The Sexual Life of Our Time.
Ellis, Havelock. Studies in the Psychology of Sex, Vol. II, Sexual Inversion.
Forel, August. The Sexual Question.
Hirschfield. Dié Homosexualität.
Krafft-Ebbing. Psychopathia Sexualis.
Otis, Margaret A. Perversions Not Commonly Noted. Jr. of Abnormal Psychology, 1913, Vol. 8, pp. 113–116.
Dr. Jacobus X—. The Abuses, Aberrations and Crimes of the Genital Sense.

AN INVESTIGATION OF A "MIND-READING" HORSE

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CASES of telepathic sensitivity in animals have been reported from time to time during the last quarter century, but on the whole have been granted little recognition from students of science. In some instances they have been so completely settled negatively in the minds of investigators in advance of any study that the investigations have frequently been superficially made or not even considered necessary for the formulation of a conclusion. This attitude of "credulous skepticism", however, is plainly unfair and unscientific, regardless of the nature of the case, and has never served to demonstrate either the truth or the error of such claims in any field. In other words, there are no *a priori* grounds for a conclusion on such a problem as telepathy, and the "hard and irreducible facts" should be resorted to.

One of the earliest cases claimed to be animal telepathy was that of the dog "Dodgerfield", owned by a Mr. Davies. This case was reported by Thorndike (11) in 1898. The dog could bring its owner the correct one out of four cards without any observed signal. The owner sat with closed eyes, hands concealed behind a newspaper, and silent except for the command, "Attention, Dodger! Bring it!" Thorndike, apparently in the absence of any decisive evidence either way, felt that it was a case of delicate association, the reading of cues in the owner's facial expression.

In 1904, Krall (5) took up the study of William von Osten's horse, Clever Hans, at Munich. This horse was said to possess not only telepathic powers but also independent thinking and calculating ability. Krall himself tried to train other horses and other animals to do similar feats, and was successful with a few horses, one of them blind. Many people, scientific and otherwise, observed these horses perform. Among them was a committee of academic scientists headed by Stumpf, of Berlin. Most of the observers agreed, with the committee, that unconscious signals from the investigator guided the horse. Some suspected that a stable man, whom they supposed was hidden about the place, gave the signals. Pfungst (6) claimed to be able to guide the horse by signals himself. A few observers, on the other hand, were convinced that the

horses exhibited telepathy and were of superior intelligence. The honesty and sincerity of Krall himself does not seem to have been questioned.

Reviews of the case from different viewpoints have been made by Richet,(7) Sudre,(10) Krall,(5) Hobhouse,(4) and others. Krall has continued his work, however, and has at present a laboratory which is said (Sudre) to be well equipped for the study of the psychology of horses and to which students are welcomed. He claims to have met successfully the criticisms made on his earlier work. He states that his horses have been able to give correctly numbers desired by persons present when there was no possibility of sensory cues being given the animal. The numbers were given by number of hoof-beats and letters by a number code. It would be highly desirable to have a reinvestigation of Krall's horses. All reports so far presented, including his own, leave much to be desired in completeness and decisiveness.

Bechterew, late professor of physiology, Leningrad,(1) reported in 1924 his investigations of two trained circus dogs. The dogs barked out numbers which the trainer, Durow, had in mind. Bechterew found that he himself could direct the dogs without Durow's knowledge. The animals could be "willed" into performing fairly complicated tasks such as going into the next room for a napkin from a table, etc. It was found that some mental following-up by the agent of the separate phases of a complex act was necessary. Successful tests were often carried out in the absence of the trainer, but the dog soon became uneasy and apparently preferred to have him present. Various precautions were taken. Screens were interposed, the agent, Bechterew, was blindfolded, assistants were used who did not know the task to be performed. Finally Bechterew stepped outside of the room just after the period of willing and the dog still succeeded. There seemed to be no physical obstruction capable of interfering with the transmission of thought, and no physical means of transmission discovered. This, if correct, is the situation called telepathy.

Yerkes (12) made some observations on a dog, Roger, thought by its owner to be telepathic. This dog could spell out words on lettered blocks if the owner had the word in mind, though she said nothing and gave no conscious move or signal. Yerkes compared the case to that of Clever Hans, at that time famous among psychologists as a study in supposed unconscious indication, and although he lacked specific evidential data for it, felt inclined to the same conclusion that Stumpf and others had arrived at in regard to the Eberfeld horses.

The following case is chosen from the extensive literature on telepathy in human beings because it is of particular interest in connection with the case herein reported. Brugmans, professor of Psychology, Groningen,(2) secured a subject who for a time yielded good results and later, for some reason, thought by Brugmans to be overstudy, lost his ability. This subject, Van Dam, was heavily blindfolded and seated at a table, a curtain being before him. He could reach out under the curtain and rest his hands on the table, on which was placed a checkered board with forty-eight squares. Brugmans sat in the darkened room above, looking down through a glass-covered hole in the floor, and was unable to see any part of the subject except his hand.

Seated in the room above, he "willed" Van Dam to move to a given square on the board, and the latter would tap twice on the board when he felt a "conviction" that he had the right square. Of 187 trials, in which chance would give four successes, 60 successes were obtained with this subject. Brugmans took certain physiological records on the percipient during the trial. Respiration, pulse, and psychogalvanic current records were obtained.

He showed that a state of passivity (self-induced in this case) was essential to success. This passive state was easily disturbed by noises, as is reported to be the case also with Professor Gilbert Murray's (8) telepathic sensitivity.

The subject did not have to be, and usually was not, attentive to what he was being influenced to do. This is in accord with the studies of Estabrooks,(3) who found diversion of attention from the tests was conducive to success.

The necessity for passivity in this work on telepathy recalls the pioneer work of Sir Wm. Barrett, as well as that of Pierre Janet, Charles Richet, and others, on telepathy under hypnosis. Stratton,(9) in the case of Rubini, found his subject "not alert" for signs or cues, and "dreamy" during the tests. In this case, while no evidence of signalling was forthcoming, Stratton inferred this to be the explanation.

This is not an attempt at a review of the literature on the subject of telepathy. Many of the outstanding contributions to the subject have not even been mentioned, since they do not bear especially on the case here reported.

The animal subject of the experiments herein described is a three-year-old filly, Lady, owned by Mrs. C. D. Fonda, of Richmond, Virginia. Lady is an ordinary looking colt, black with white face and feet, and she behaves in the yard like any normal horse of her age, except that she is more accustomed to the presence of stran-

gers. She is not especially well broken to handling as yet, although Mrs. Fonda succeeds pretty well in managing her.

Mrs. Fonda acquired the colt in the suckling stage, reared her on the bottle, and trained her to work with lettered and numbered blocks. She undertook to teach the animal to spell out small words and to make simple computations, having the colt touch the proper blocks with her nose. According to Mrs. Fonda's statement, she was much surprised at Lady's intelligence, her aptness in learning, and she soon discovered indications which convinced her that her pet was "reading her mind", that is, obeying her commands before she had expressed them.

According to the reports which led to our inquiry, the horse could make predictions, solve simple arithmetical problems, answer questions aptly and intelligently, and do all this without verbal command. All that was needed was that the question be written down and shown to Mrs. Fonda. In Mrs. Fonda's opinion, these accomplishments were due to a combination in the horse of unusual intelligence and the capacity for "mind reading".

The study of the telepathic claim naturally centers around the question of whether there is signalling from agent to percipient, in this case, from Mrs. Fonda to the horse. Such signalling may be deliberate and conscious, as in movements of whip or arm or head, or in word cues, throat sounds, and the like. Or it may be unintentional and unconscious, provided the agent is not on his guard, and consist in an inclination of the body, a suspension of breathing, a tension of the muscles, a direction of looking, etc.

A case for telepathy can be made only by the successful exclusion of signalling, thus eliminating the normal sensory channels. If mental influence is transferred under these conditions the phenomenon is named telepathy, with no claim implied as to the nature of the process. The common alternative hypothesis, hyperesthesia, is dependent on signals or cues, and therefore stands or falls with the evidence for a signalling system. We had to do, then, with a simple question: What is the evidence for and against signalling?

Our experiments were begun on December 3, 1927, and ended on January 15, 1928, covering in this period a total of six days. The tests were made at the residence of Mrs. Fonda, in a demonstration tent about 9 x 12 ft., which had a stall for the colt in one corner and a rude table near the center, toward which the animal faced. On this table were placed as needed cubical letter blocks (child's blocks) with the letter on one face only, or number plates each about 1½ inches wide, with one of the figures from 0 to 9 on each.

Mrs. Fonda usually stood by Lady's head on the left side, and all others stood across the table from the horse.

Mrs. Fonda readily accepted any suggestions we made and allowed us to follow our own schedule. We arranged the blocks or plates in any order we wished, and changed them frequently. We instituted the arrangement of the ten number plates in two rows of five: Mrs. Fonda had customarily had one row of ten. Sometimes the blocks or plates were only 1½ inches apart; sometimes they were as much as eight inches.

We were not always able to progress smoothly toward our goal and had, in some cases, to repeat the same tests on different days in order to reach satisfaction on them. They are therefore not given chronologically. In general, our aim was to run the tests in series of five, ten, or fifteen. But in several cases there were changes made in the conditions during a series, a breakdown of control or a tightening of restrictions, and as a consequence we have some short series or fragments.

For convenience in comparing the results with what chance would give, we used ten blocks, cards, or number plates, with but few exceptions, which are noted. This gave a chance basis of 1/10, or one success (C) in every ten tests. We made actual guessing tests with the numbers 0 to 9, in order to check this figure, and in 200 tests the average was 11 C's per 100, which is very near the mathematical prediction. In no series of ten were more than two correct guesses obtained. This confirms the mathematical prediction of one success in ten as a basis for chance. Where a second trial is allowed, $1/10 + 1/9$, or 19/90, is the chance value. This is about one chance in five. Two C 2's therefore are about equal to one C.

Professor William McDougall (hereafter designated as M) was present and participated in the experiments on two days of the six, and Assistant Superintendent John F. Thomas, of the Detroit schools (T), on one other day. Others present were Mrs. C. D. Fonda (F), J. B. Rhine (R), and Louisa E. Rhine (LER). Mr. C. D. Fonda was present at some of the experiments, and was at the beginning suspected, as anyone would be, of being part of the system. But since he was present only a part of the time and then very inconspicuously, often not knowing what the "thought" was (see Group C), and since he seemed to have no more control over the horse than we ourselves, we leave him out of the account for the sake of brevity. LER recorded the data throughout, together with the conditions of the tests, at the time of occurrence.

EXPERIMENTAL

Group A

UNRESTRICTED CONDITIONS

This group consists of observations made with F entirely unrestricted, and is given to show some of Lady's feats. In most of these cases F talked freely to the horse and used the whip occasionally when necessary to urge her to work. F sometimes caught Lady's halter and drew her back for a fresh start. In movements such as these, and in the words and inflections of her spoken commands, we naturally looked for evidence of a system of guidance.

I. Ten number plates on table in one row (numbers from 0 to 9). R wrote a single figure on a pad and silently showed it to F only.
Tests 1–5. Numbers chosen: 3, 9, 9, 2, 4.
Results: 4 correct, 1 correct on second trial.

II. R asked Lady what time it was. All knew approximately. Time was 2:45. Lady touched 2, 3, 0.

III. Ten number plates in two rows. M asked orally.
Tests 1–10. Problems: $4+3$, $4+4$, $6+3$, $4-2$, $\frac{1}{2}$ of 60, of 160, of 100, cube root of 64, of 27, and of 1,728.
Results: 8 correct, 1 incorrect (no second trial given except where specified), and 1 untried. The cube root of 64 was the incorrect one, and that of 1,728 was not tried.

IV. Twenty-six lettered blocks on table in two rows. M and R wrote words on pad and showed to F. She told Lady to "Spell the word", but did not say what it was.
Tests 1–5. Words: bed, kid, Mesopotamia, Carolina, Hindustan.
Results: All correct.

V. Table as in IV. F asked questions. C here means a sensible reply.

1. What is this gentleman's name?	Rhine—C
2. What have I in my hand?	Whip—C
3. What has Dr. McDougall on his head?	Hat—C
4. Can you spell boy?	Boy—C
5. How are you feeling?	Good—C
6. Don't you like the board? (Wooden screen up in front of her. She did not seem to like it.)	Blind—C
7. What makes you so bad?	Fun—C
8. Where does Mr. Thomas go from here? (He went to Detroit eventually, which F knew, but first to New York City, which F did not know.)	Detroit—C
9.*Where can I borrow some money? (Written on paper and handed to F. Not read aloud.)	Bank
Which bank?	Commerce
Which one? Richmond?	Yes—C

10.* Where is ———? (Whereabouts of a wanderer.) N. Y.
State or city? State
What city? Troy—C

VI. Twenty picture blocks about 1½ in. cubical, with figures of animals and other objects printed dimly thereon. F verbally ordered Lady to "Find a dog", etc. Lady, touching the requested block with her nose, located fifteen in all without an error.

Blocks located: camel, turkey, pony, buffalo, pony, sailboat, lion, parrot, eagle, camel, dog, rabbit, bull, sheep, and cat.

VII. Set of ten index cards on the table, each with a peculiar figure drawn with crayon, designed to be unnameable at first sight. From a duplicate set R drew one at random and showed it to F, who had not seen these cards before, R having shown the set that day for the first time.

Tests 1–5: All correct.

Group B

TRAINER RESTRICTED

In this group the freedom of F was gradually restricted in order to limit the possibility of signalling. F knew the number chosen. It was selected by M or R, usually from a duplicate set in his pocket, sometimes mentally. Plates were arranged in two rows of five each.

VIII. Voice eliminated.

F silent. Otherwise unrestricted.

a. R chose numbers.

Tests 1–10. Numbers chosen: 2, 7, 4, 0, 2, 9, 6, 8, 3, 1.

Results: 9 correct, 1 correct on second trial. (F spoke during tests 1 and 2.)

b. Same as a, except that M gave oral direction to Lady.

Tests 1–5: Sum of $2+4+7$, $3+5+4$, $5+9+7$, $6+8+9$, $7+8+9$.

Result: All correct.

IX. Body movements eliminated.

F silent and motionless but free to watch the horse.

a. M selected numbers and showed to F. M occasionally spoke to Lady.

Tests 1–10. Numbers: 3, 8, 9, 5, 8, 8, 2, 4, 3, 5.

Result: 9 correct, 1 correct on second trial.

b. Same as a, except M absent. R selected number. Showed to F only.

*Questions 9 and 10 are drawn from a "Visitor's Hour" at which R and LER were present. They are given as types to show Lady's characteristic type of response to questions asked her.

Tests 1–5. Numbers: 6, 8, 4, 0, 3.

Result: 4 correct, 1 correct on second trial.

c. Ten lettered blocks were turned face down on table. They were blank on visible faces. A diagram of the arrangement was made on a pad. R indicated to F alone which block he chose, by pointing to the corresponding one on the pad. No one spoke during the tests.

Tests 1–5.

Result: All correct.

d. Ten cards, those of experiment VII, with drawings of unnameable designs, were used instead of blocks. Choice was made by R from shuffled duplicate pack and shown to F alone. All silent.

Tests 1–5: 5 different cards.

Result: All correct.

In c and d it is apparent that a system of signals involving the names of the objects or blocks to be touched was unnecessary and that the location alone was quite sufficient to guide the horse. This location or arrangement was of course our own, and not that of F.

X. Head and eye movements eliminated.

a. F looked out of tent door, her back to table. She held whip. R watched F, and noted that she glanced back at Lady several times. F allowed to use words chosen by us, "Find the number, Lady". Lady required urging. R and F knew the number.

Tests 1–10. Numbers: 4, 6, 4, 0, 1, 7, 3, 1, 9, 4.

Result: 5 correct, 3 correct on second trial, 2 incorrect.

b. F stared in a fixed direction during the test, turned so as to be visible only in profile to Lady's eye. LER watched her. F was silent, motionless (eyes, head and body), and held the whip at her side in the hand away from the horse. R wrote a figure on the pad and silently showed it to F only. F was allowed to give Lady directions only before the number was written down.

Tests 1–5. Numbers: 8, 7, 5, 8, 1.

Result: 4 correct, 1correct on second trial.

c. F restrained as in b. R watched her. Ten blocks, blank except on faces turned down, were used. R indicated to F alone the block chosen by pointing to the corresponding one on a diagram drawn on a pad. LER called results.

Tests 1–8: 7 different positions in 8 tests.

Result: All correct.

During the first three tests F glanced around momentarily about the time Lady touched. During the last five both she and R were motionless and silent. No one else knew the number.

d. F with eyes closed to prevent Lady from seeing them.
Tests 1–5. Numbers: 8, 4, 3, 4, 6.
Result: 3 correct, 1 correct on second trial, 1 incorrect.

e. F with closed eyes. R watched her. M mixed blocks, F and R not seeing them thereafter. Thus F and R alone knew the letter chosen and no one knew its location.
Tests 1–2. Letters T, F.
Result: 1 incorrect after three trials, 1 incorrect after two trials.
The horse's movements lacked their usual definiteness. She touched or nodded sometimes at a block (wrong), sometimes between two of them, in an apparently random fashion.
This series shows that knowledge of the location of the chosen number by someone present is necessary, and that the knowledge of which letter it is is not enough. In series IX c and d it was shown that knowledge of the location alone was sufficient. These tests suggest, therefore, that the horse does not know the letters and that superior intelligence is not a factor.

f. Eyes of all who knew controlled.
Only F and R knew the number chosen. Both knew its location. F's eyes were closed and her fingers held over them. She held whip but used it only with unopened eyes when Lady needed urging. Her speech was limited to "Find the number, Lady". R looked out the tent door during tests. M called results.
Tests 1–7. Numbers: 8, 4, 3, 4, 1, 0, 4.
Result: 4 correct, 3 incorrect (tests 2–4).

g. F blindfolded.
A woolen scarf, doubled, covered her face from the forehead to the tip of the nose. She was allowed to say, "Find, Lady", when necessary. R asked orally.
Tests 1–5. Problems: ½ of 18, ¼ of 32, 1/20 of 100, 1/50 of 100, 1/25 of 100.
Result: 4 correct, 1 incorrect.

h. All agents under control.
F blindfolded, silent, and motionless. R looked away during tests. He gave the location by description only, speaking in low tones to F. Numbers were changed around so that F would not know the number at a given location.
Tests 1–5. Five different locations given, as "Last one in first row."
Result: All correct.
These results of oral tests might conceivably be due to superior intelligence. But it is evident from the general data so far presented that some unusual transfer of thought, whether by signalling or by telepathy, is involved. Either explanation is theoretically adequate to explain the results without the assumption of a superior intelligence. Moreover, certain tests, such

as X e, indicate that Lady does not act from knowledge of the letters and numbers but rather, as in IX c and d and later series show, from being somehow directed to a given location. We feel safe, therefore, in presenting these data, when taken with the general setting, as not being subject to the criticism of possible superior intelligence (see XVIII).

XI. Trainer gradually separated from horse.

We encountered difficulty in this attempt and had to foist the innovation on the horse as opportunity permitted, since she stopped working when she became aware of F's absence. This was natural and would doubtless have required considerable time to overcome. But the results indicate that it could be done.

a. LER between F and Lady.
F silent, motionless, eyes controlled. R and F knew.
Test 1. Number: 4.
Result: Correct.

b. R between F and Lady. F gradually withdrawing.
Fifteen lettered blocks used. T wrote letters on pad and showed to F and R.
Tests 1–3. Letters: B, C, O.
Result: 1 correct, 1 correct on second trial, 1 incorrect. (Trouble with the horse; she looked around for F.)

c. R with screen between F and Lady.
18 x 18 in. board held by R near Lady's head screened both F and himself from the horse. F said only, "Find the number, Lady".
Test 1. Number: 8.
Result: Correct on second trial.

d. F blindfolded and outside tent, out of sight. M asked orally. R stood by Lady. Both M and R with eyes controlled during tests.
Tests 1–2. Problems: ½ of 68, ½ of 86.
Result: 1 correct on second trial (gave 32 instead of 34 first), ½ correct (gave 4 on last problem, then became aware of F's absence and ceased working).

e. The two series of tests with F away from Lady, in XIII b and c, belong here also.
Few as our data are on the point of separating Lady and F, they show that F's position by the horse's side is not essential except for the matter of controlling the colt and so facilitating the procedure.

XII. Screen interposed between horse and trainer.

a. A board 18 inches square was used. F held screen. She could see some of the number plates and the horse could probably see her feet and coat. F's remarks were limited to "Find the number, Lady".

Test 1. Number: 4.
Result: Correct.

b. F and R both behind screen, which F held. R and F alone knew. F's expressions limited as in a.
Tests 1–5. Letters: W, U, F, O, D.
Results: 4 correct, 1 incorrect.

c. Same as b, except that R held board.
Tests 1–5. Letters: N, K, K, G, T.
Result: 2 correct, 2 correct on second trial, 1 incorrect. (This was correctly indicated by Lady's nod, but she did not actually touch it.)

The restrictions imposed in this group without preventing success served to eliminate certain possibilities of signalling. Audible cues could not have operated with F silent and separated from Lady by one of us. Movements of the body or of eyes were ruled out by the successful series in which F as well as M and R were controlled and motionless. Even the most delicate cues, whether conscious signals from F or unconscious ones from R, were invisible when the board screen was interposed.

Group C

TRAINER ELIMINATED

In this group F was kept ignorant of the number chosen. She was eliminated thus as a factor in the process under investigation, yet was retained as an aid in controlling the colt and making her work for us.

XIII. F ignorant of number.

a. M and R alone knew the number. Both stood at the end of the table, where unconscious signalling, if any, would be least effective.
Tests 1–5. Numbers: 1, 5, 9, 1, 6.
Results: 4 correct, 1 incorrect. (Lady in this test went to correct number, but did not touch.)

b. R alone knew the number and stood at Lady's head. He spoke and used whip when necessary. F stood behind R, at first close, then farther back toward the tent wall.
Tests 1–6. Numbers: 2, 3, 7, 4, 2, 3.
Result: 4 correct, 2 correct on second trial.

c. F out of tent. T and R alone knew the letter. Fifteen blocks on table. This is a continuation of XI b.
Tests 1–3. Letters: K, Y, T.
Result: First one correct, second incorrect (Lady now aware of F's absence), third untried. Horse out of R's control.

XIV. F ignorant of number. Precautions against unconscious signalling.

a. T and R alone knew number. Their eyes shaded by hats from F and Lady. Lady not well behaved in this series.

Tests 1–5. Numbers: 4, 0, 8, 6, 3.

Result: 1 correct, 2 correct on second trial, 2 incorrect.

b. M and R alone knew. M and sometimes R behind a screen which concealed head and shoulders but allowed a view of the table. This screen consisted of two large boards arranged in front of table. The horse was disturbed by it.

Test 1. Number: 4. R at end of table.

Result: Correct.

Tests 2–5. Numbers: 9, 4, 7, 0. R behind screen with M.

Result: 1 correct, 3 incorrect.

Tests 6–10. Letters: S, F, V, D, W. R at end of table.

Result: 2 correct, 1 correct on second trial, 2 incorrect.

Tests 11–15. Letters: F, F, T, S, Q. R behind screen with M.

Result: 1 correct, 4 incorrect.

When R was behind the screen, the first test was correct each time. The introduction of this screen seemed to distract the attention of the horse and there was not time to accustom her to it. Screening her view on the side, however, did not interfere in this degree, although it even more completely cut off her view of those who knew the number, and who supposedly could have been directing her (see XII a, b, and c). Also, as in the tests with F outside the tent, the first test under the new conditions was a success each time, and made four such cases in all.

These results, however, are above the probabilities for coincidence, which would allow two correct out of the total of nineteen trials, as against the five (one being double, of two figures) which we got. The failures might have been due to the distraction of the animal's attention and to F's inability to keep from guessing at the number herself and exerting a misleading influence upon the horse.

c. R alone knew the block, which he chose mentally. He stood motionless except for his eyes, which were shaded by his hat from the vision of F and Lady. He was consciously non-communicative and held his head straight ahead throughout. His hands were clasped in front against the body in all tests. He limited his speech to "All right, Lady", after a correct trial, and "No, Lady", after a failure.

Tests 1–10. Seven different positions chosen.

Result: 5 correct, 1 correct on second trial, 4 incorrect.

d. Same conditions, but the ten cards with the queer, unnameable drawings, were laid on the table in two rows of five each.

Tests 1–5. Five different positions chosen.

Result: 2 correct, 1 correct on second trial, 2 incorrect.

The results of c and d, with five correct and two correct on second trial above the chance basis, are conclusive. We are unable to conceive of any optic or acoustic cues of guidance value that were possible under these conditions, even though there was not, as in XII, a screen interposed.

Group C demonstrated that others could act as agents, instead of F. Though not so successful as F, they still succeeded well above the allowance for chance, even when under conscious control over unconscious indications. It will be seen that there is much left to be done yet in training the horse with a stationary screen, and with F out of the tent, etc. But we feel satisfied that we have circumvented these difficulties to an extent that gives us practically equivalent results. F ignorant of the number is equivalent to F absent, in effect, and the screen of XII was equal to that of XIV.

All the tests that were made are included in this report with the exception of certain preliminary and superfluous ones which have no point of interest or are useless duplications. These omissions number in all 65 tests, 40 of which were successes at first trial, 7 at second, and 18 were not correct on second trial. The complete data are summarized in the following table.

TABLE I.

Group	Total no. of tests	Successes 1st trial	Successes 2d trial	Failures	% of successes on first trial
1. Omitted	65	40	7	18	61.5
2. A—no control	54	51	1	2	94.4
3. B—various restrictions	106	83	8	15	78.3
4. C—F not knowing	49	22	5	22	44.9
5. Control—guessing on 10 number blocks, number 0–9	200	22	..	178	11.
6. Mathematical probabilities	..	..	..	..	10.

One striking feature of the horse's behavior has not been mentioned, namely, her sleepy appearance when working well. Her head drooped, eyes nearly closed, nortrils relaxed, and she seemed quite inattentive. She moved no more than was necessary to touch the required block and often touched a nearer one in the next row. This passivity could be so deepened (by monotonous command, for instance) as to render her apparently motionless and almost asleep. Occasionally she would fall so deeply into this lethargy while working, that she simply remained motionless for a time. She could

be awakened by a sharp command or a touch of the whip and become quickly a normal active colt again.

Discussion

There are three general hypotheses for the explanation of Lady's behavior:

a. Trained-in habits or response to a system of definite conscious signals from F.
b. Trained-in habits of response to a system of definite unconsciously given cues from F and others.
c. Telepathy, or the transmission of mental influence by a process that does not involve the known senses, but which does involve some special susceptibility or sense in the subject.

The conscious signal theory is disposed of by the Group C tests, in which F was eliminated, as well as by the Group B experiments in which she was so restricted as to make such a system seem an impossibility.

The theory of unconscious guidance seems equally untenable, in spite of its elasticity, since

a. This theory assumes involuntary gestures, but the same psychologic assumption must grant also voluntary control over them. In XIV c and d and others this control was exerted.
b. The horse's view of possible signalling organs was intercepted by the board screen in XII. Auditory cues were at the same time ruled out of XII c, in which R himself, as well as the board was between F and Lady.
c. No signals were observed by anyone present, other than F's undisguised movements when unrestricted.
d. The giving of cues under our conditions could hardly have been possible. To point out one of ten blocks a few inches apart without making a visible move or audible sound, and with eyes controlled, is hardly in itself a conceivable possibility. Besides this in the X c series, the agents were not even looking at the blocks during the trial.
e. The colt's whole manner indicated indifference to signals. There was no sign of attention to the agents. She did not hover over all the blocks awaiting a signal, but as a rule made definite moves. Her passive state of body was one

least associated with alertness, whereas the reading of delicate, to us invisible, signals, would, if possible at all, require the animal's best attention.

There is left then, only the telepathic explanation, the transference of mental influence by an unknown process. Nothing was discovered that failed to accord with it, and no other hypothesis proposed seems tenable in view of the results. However, we are still devoted to the end of more and better evidence and are interested at this stage in obtaining, not so much credence, as assistance in securing more evidence.

The continuation of the research will be greatly facilitated by information regarding dogs, horses, or human beings who may possess telepathic ability. Even the so-called "thinking" or "calculating" animals may be of use. It is unfortunate that such animals are usually celebrities and their time must be purchased at high figures. Without special financial aid this is a real obstacle.

Supplementary Notes

During the interval between the completion of this report and its publication, some results were obtained that will be of interest to those who have read the report given above. These are briefly summarized below.

On April 11, 1928, we broke in upon Mrs. Fonda and Lady when preparations were being made by the Fondas to move for the summer. We were given an opportunity to experiment although it was obvious that the conditions were not favorable. Mrs. Fonda had not been well for some time and was distinctly nervous. She showed this conspicuously in her use of the whip, and her impatience with the horse. She had less control over Lady than usual, and at the beginning of the tests even used a halter strap to help her manage the colt. This was abandoned in all the tests recorded, however. As would be expected on a theory of telepathy, the horse did not work well and made many mistakes, even for Mrs. Fonda herself. She did not succeed at all without Mrs. F. knowing—did not even obtain the theoretical chance success of two correct out of eighteen tests given. It seemed probable that Mrs. F. was not calm and self-controlled enough on this occasion to keep her own mind blank, and the "guess" she made was more effective than our influence. Her influence upon the horse is characteristicly stronger than ours, as might be expected.

When we allowed Mrs. F. to know the number but controlled her

by having her direct her eyes at a given point or by having her blindfolded and leaning against a post for stability, Lady succeeded in getting over 50 per cent correct as an average. Compared to the 10 per cent allowance for chance probabilities this is a fair margin, but is much lower than her previous records shown in the above report.

The most important advance in this series was an attempt to get results with Lady's left eye blindfolded. The blindfold consisted of heavy folded flannel cloth, and with it on Lady could not see the agents, Mrs. F. and J. B. R., without turning her head. Out of 11 tests, 4 were correct. Two of these successes were obtained with the agents not only invisable, but silent. The other two were qualified by Mrs. F. using the expression allowed by us, "Find, Lady". This is at least significant enough to be encouraging and promises better results when Lady becomes better accustomed to the conditions. The blindfold disturbed her and she tried to rub it off. The conditions should not be distracting for a fair test.

Another series on this occasion offers some light on the process, at least by elimination. Without any attempt at restrictions or control, Lady was asked by one of our party at what hotel we had stayed during the night. She spelled M-A-U-R-, but the correct word was "Savoy". Asked where we had eaten supper, she spelled D-U-R-H-A-M (our home, and a good guess), including two mistaken letters in the spelling. The correct answer was South Hill. In both cases, after we told Mrs. F. what the correct answer was, Lady gave it correctly and promptly. It seemed as if Mrs. F.'s "guess" was overwhelmingly stronger than our faint influence. When a comb was drawn from the pocket and held before the horse, so that Mrs. F. could not see it, with the question, "What is it?" Lady spelled C-A-R-D, and when told this was incorrect, P-E-N. But when the comb was shown to Mrs. F., C-O-M-B was given at once. From a duplicate set of blocks, five were chosen, one at a time, and each was held before the horse's face in a position which kept Mrs. F. from seeing the letter on it. Lady was asked to show which it was. In all five trials, she touched incorrect blocks. But in each case, after failure, the block was turned so that Mrs. F. could see the letter. Lady then got it correctly every time. These results appear to show that Lady does not have a "working knowledge" of the alphabet, with which most of her work is done, and that in some manner she is directed to the blocks by an external agency. Also, if the reader should still be holding to the theory of unconscious indications, it must puzzle him to find that in these series in which we stared at the block desired and

expected, and gave beyond doubt such indications as the average human does under such circumstances, we obtained no success until Mrs. F. knew the number. Whereas, in XIV, with careful precautions taken to prevent such indications and with Mrs. F. not knowing, we were successful.

On September 16, 1928, Mr. Kenneth McDougall succeeded in directing Lady with Mrs. F. ignorant of the choice. Cards with geometrical designs drawn on them were used. Mr. McDougall made his choice from a duplicate pack, concealed from Mrs. F. In order to avoid unconscious direction he kept his gaze fixed on the tip of Lady's nose during the tests. Out of 10 tests, 4 were correct, 1 correct on second trial, and 5 incorrect.

On the same occasion, Mrs. William McDougall was even more successful under similar conditions. She used numbers of two figures each, and wrote each one on a pad in a manner that concealed hand movement from Mrs. F. Mrs. McDougall too was careful not to allow her gaze to rest on the block to be touched. Out of 6 double numbers, or 12 figures, 8 were correct, 1 correct on second trial, and 3 incorrect.

These results, like those reported above, are very much too good to be disposed of as coincidental, while on the other hand they are far too poor to be the result of training. The fluctuations are too pronounced, varying as they do all the way from failure to perfection (with F knowing). The trained animal does not behave in this way. Telepathy experiments, where that process is operative, however, have shown this variability to be rather a general feature. Either the agent or the subject may vary greatly from time to time, and the results accordingly range from 0 per cent to 100 per cent in correctness.

To illustrate the possibility of detection and elimination of unconscious indications, we mention briefly the case of a Belgian shepherd dog which we investigated in July, 1928, with Dr. William McDougall, near Silver Lake, New Hampshire. The dog was reported to be able to give, by the number of barks, correct answers to such questions as, "How many ladies present?" "How many loads of hay did we get in to-day?" and, in some cases, to questions to which he could not have known the answer, no matter how intelligent he might be. In this case the behavior of the animal was relatively simple compared to that of Lady; the dog simply barked until a stimulus, from without or within, stopped him, while Lady moved directly to one of the 10 to 26 blocks, touched it with her nose, and then went to the next one.

We found the dog able to do as reported. But it was easily

observable that the owner, quite unconsciously, gave him some very definite cues when the proper stopping point was reached. He relaxed his facial muscles, changed the direction of his glance, moved his hands, and frequently turned his head and straightened his body. The dog ceased to bark when he got these signs. When after some difficulty the man was persuaded to avoid such indications, the dog kept on barking; and when he gave his commands through a crack of the door or from behind a closed door the dog barked, but with no success. The dog appeared to be able to count fingers, but when J. B. R. stood behind the owner and showed the animal a number of fingers, he failed in any case to get the correct number. Therefore, while we could not say with finality from the relatively brief investigation of this animal that there was no unusual mental process in operation, it was evident that these obvious unconscious cues were principally responsible, although there may have been more than the average dog's intelligence as a basis for his actions. It is plain from this case that unconscious indications constitute a real alternative hypothesis to telepathy, but that they can be consciously avoided on the one hand, and detected and prevented on the other, if they occur.

We are greatly indebted to Professor William McDougall for counsel, encouragement, and coöperation in the course of this study. He took an active part, spending four of the eight days with us, and contributed much to the progress of the work. We are indebted also to Supt. John F. Thomas and to Duke University for financial assistance.

LITERATURE CITED

1. Bechterew, W., Ztschft. f. Psycho-therapie, 8:280–304, 1924.
2. Brugmans, H. J. F. W., L'état passif d'un télepathe controlé par le phenoméne psychogalvanique. Compt. Rend. 2d Congress Internat. de Metapsychique, Warsaw, 1923. (See Heymans report same case, Richet (7 below), p. 172.
3. Estabrooks, G. H., A Contribution to Experimental Telepathy. Bull. V, Boston Soc. for Psychic Res., 1927.
4. Hobhouse, L. T., Mind in Evolution. 3d edition, 1927 (Macmillan). See appendix.
5. Krall, Karl, II Denkubertragung zwischen Mensch und Tier. Ztschft. f. parapsychologie, 21:150–153, 1927.
6. Pfungst, O., Clever Hans. (Holt) 1911.
7. Richet, Chas., Thirty Years of Psychic Research. (Macmillan), p. 240, 1923.
8. Sidgwick, Mrs. Henry, Report on Further Experiments in Thought-transference carried out by Professor Gilbert Murray, LL.D., Litt.D. Proc. Soc. for Psychic Res. (London), Vol. XXXIV, 1924.
9. Stratton, D. M., The Control of Another Person by Obscure Signs. Psych. Rev., 28:301–334, 1921.
10. Sudre, Rene, Animal Metapsychics. Jour. Amer. Soc. Psychic Res., XXI:627–634, 1924.
11. Thorndike, Edward L., Animal Intelligence. Psych. Rev., 8:1–109, 1898. (See p. 88.)
12. Yerkes, Robt. M., Roger. Cent. Mag., XXI:599, 1907–8. (See also report of owner, B. B. E., in same volume, p. 597.)

ACHIEVEMENT AND CONFIDENCE ON TRUE-FALSE TESTS OF COLLEGE STUDENTS

By EDWARD B. GREENE.

THERE is a very marked and hopeful tendency in all varieties of teaching to try to make more careful measures of the results of various learning processes. One of the most recent and widely used measures is the "True-False" test which, in its various forms, requires the student to choose between two judgments concerning a statement. The advantages of this form of test are:

1. It probably covers more facts in a given time than any other type of test.
2. It allows a quick and fairly reliable analysis of both the efficiency of the course of instruction and the knowledge of the individual student.
3. It can eliminate the unreliable subjective factor in scoring, if the authors of the test can clarify their own thought and compose a test of entirely unambiguous statements. Such tests are a challenge to the instructor to decide what are the essential facts of the course.
4. According to Wood,(8) Ruch,(4) and others, it gives a more reliable measure than the essay type of test and nearly as reliable a measure as any other form of short answer test.

The disadvantages of the true-false tests are:

1. It takes much more time to compose than essay types, and usually it takes longer to score, although some of the scoring may be done by clerical assistants.
2. In many forms it encourages guessing and bluffing.
3. It is supposed to encourage superficial rote memory and cramming rather than careful analysis and organization.

Many writers urge that these disadvantages may be overcome by practice in the careful selection of questions and administration of tests. In certain technical subjects, and for matter of fact questions, the true-false form of test has probably found a permanent place. It should therefore be given the most careful analytical and statistical scrutiny.

Perhaps the most serious criticism of the true-false test is that persons may sometimes get a rather large proportion of answers right by mere chance. This paper reports some experiments to ascertain how much college students differ in willingness to guess or take a chance as shown by their estimates of confidence in their own answers. It also attempts to ascertain how consistently they

differ. The question of the most valid method of scoring the test in the light of these results will be considered in another paper.

Previous work on self-estimates of rightness or confidence by Cattell,(1) Henmon,(2) Hollingworth,(3) Trow,(5) and West (6) indicate that the average student is more confident of his right than his wrong judgments, the degree of confidence varies with the complexity and type of test, and that in an unselected group there is a nearly chance correspondence between achievement and a score representing total confidence. There are two possible explanations for this lack of agreement between confidence and achievement. It may be that the majority of individuals are so inconsistent in their use of confidence ratings that no reliable results may be expected, or it may be that the students who achieve least generally overestimate what they know, while the opposite is true for the better students. Most of the previous work is only suggestive because of the small number of students (West, who had the greatest number, used 170) and the small variety of tests, which in themselves were not very reliable.

In the present study two groups of 125 men each, sophomores and juniors enrolled in elementary psychology courses, were tested as follows:

Group I was given Tests 1 and 2. Test 1 was a test of recognition of technical material immediately after it had been delivered in a twenty-five-minute lecture. Test 1 includes four twenty-five-item tests taken after four lectures spaced one week apart. Test 2 was an 144-item test, part of the final examination of the first semester's work.

Group II was given Tests 3, 4, and 5. Test 3 was a fifty-item recognition test of a 2,400-word story of the Mori Indians. The test followed immediately after one oral reading of the story. Test 4 was a "same-opposite" vocabulary test of fifty pairs of words similar to the Army Alpha test No. 4. Test 5 was a sixty-item test of miscellaneous information which includes statements from the fields of mathematics, chemistry, geology, music, Greek architecture, literature, American history, and mechanics. The writer is indebted to Miss M. L. Smith, who prepared this material in test form.

These tests are further described in Table I.

TABLE 1. DIFFICULTY OF TESTS, NUMBER OF STUDENTS, TIME ALLOWANCES.

	1. No. Items	2. No. Words	3. Uncomm.	4. Special	5. No. Subjects	6. Minutes	7. Words Per Min.
Group I.							
Test 1. Immediate Recognition	100	1382	.081	.085	94	28	49
Test 2. Mid-year . . .	141	1840	.089	.101	155	90	20
Group II.							
Test 3. Immediate Recognition	50	506	.052	.020	114	15	33
Test 4. Opposites . . .	50	100	.550	.000	134	7	14
Test 5. Information .	60	623	.074	.092	131	20	30

(This table may be read horizontally: Test 1, had 100 items and 1382 words of which 8.1% were uncommon, and 8.5% had special meanings of a technical sort derived from the context. Complete records were secured for 94 students. Twenty-eight minutes was the time allowed, which gave a minimum reading speed of 49 words per minute for completion.)

NOTE: Column 1. Represents the number of separate statements. These average between ten and thirteen words.

Column 2. Is a count of the actual number of words to be read including the directions.

Column 3. Gives the per cent of words not found among the 10,000 commonest words listed in the Teacher's Word Book, E. L. Thorndike, Teachers College Publications, 1921.

Column 4. Gives the per cent of words used technically, some of which were common and some uncommon, *e.g.*, "gray matter" is an illustration of two common words used technically.

Column 5. Indicates the number of students who completed the test complying with the directions.

Column 6. Is the record of the number of minutes allowed for the test, with the exception of Test 2. Here the average time taken by the students is reported, approximately 90 minutes. The writer estimated that practically every one finished reading all of the test material. This is confirmed by the liberal time allowance, and by the fact that omissions were distributed very evenly in the various quarters of the tests.

Column 7. Gives the minimum number of words which must be read per minute in order to complete the reading. This figure is secured by dividing the number in Column 2 by that in Column 6.

Summarizing Table I, we may say that it shows a wide variety of tasks ranging in length from 100 to 1,800 words; in "uncommonness", column 3, from 5 to 55 per cent; in "technicality", column 4, from zero to 10 per cent; and in speed of reading, column 7, from 14 to 49 words per minute.

Two methods were used to secure ratings of confidence, one calling for three arbitrary degrees of confidence, and the other for two degrees of confidence. Group I was given these written instructions:

"If the statement is true, draw a circle around the *T;* if false, circle the *F*. Indicate your confidence in each answer by circling the *A* if you are quite sure, the *B* if you are fairly certain, and the *C* if you are doubtful."

"T F A B C The experimental work of Landis indicates that the subjects generally experienced an awareness of an emotion before the physiological reaction occurred."

The students in Group II were given these written instructions:

"If the statement is true, draw a circle around the *T;* if false, circle the *F*. Indicate your confidence in each answer by circling the numeral of the question if you are quite sure, and by leaving the numeral untouched if you are doubtful. Try to answer every item."

The students were all naïve in the use of the word "sure". In the absence of any objective criteria, they were not instructed to

use the term with any special sense. It would be well, if possible, to set up some relative standard, such as, "*A*, for sure, as the fact that I am here, or *A*, for sure, to extent of 95 cases in 100". In the present experiment it was decided to try to find out how students would use confidence ratings without such standards, as a check upon their usual standards, and for a control group to be compared with later groups trained in some manner. None of the students had ever used confidence ratings before. It is probable that this process, like most other reactions, would become more consistent through practice. Practice effect has not been here investigated.

In the absence of either objective or relative standards, there can be no sharp lines drawn between degrees on the scale of confidence, nor can we assume that one person's rating of *A* will be equal in confidence to another persons rating of *A*. Neither can we assume that one person will use the *A* rating consistently a number of times. From everyday experience and from the authors cited above, we must rather assume that the self-estimates of confidence will vary with the subject matter, the observer, and with his mood.

Another important factor influencing the use of ratings is the belief that one will get more credit if he marks all answers *A*. In spite of the fact that students were told that the ratings would have no influence whatever on their grades, about 1 per cent of Group I and 2 per cent of Group II marked all answers *A*. These records were not included in the results because it was thought that directions had not been followed. It must be remembered that we have no measure of the correspondence of the student's real confidence with his self-rating of confidence. This paper deals only with the ratings.

Results and Discussion

Throughout this discussion the test scores will be reduced to percentages, in order to allow ready comparison between the tests. Tables are presented to show, first, the total amount of confidence as shown by the distribution of confidence ratings and achievement; second, the consistency in the use of confidence ratings as shown by the proportion of correct answers to the *A*, *B*, and *C* ratings, and third, the use of ratings by various quarters of students when divided according to mental test scores.

All the test results were nearly normally distributed, but all showed slight skewness. The skewness was not constantly in one direction, and since it was very small it is not further considered in this paper. The coefficients of variation are all very near .10,

and the reliability coefficients, as indicated by the Brown-Spearman formula, range from .46 to .87, dependng chiefly upon the length of the test.

Diagram 1 and Table 2 show that the immediate recall material was found to have about 66 per cent correct answers, while the review material and vocabulary test had 76 per cent and 85 per cent correct, respectively. The information test was the most difficult of all, resulting in only 62 per cent correct. A comparison of Diagrams 1 and 2 shows that the proportion of right answers had a fairly constant relation to the proportion of *A* answers. This indicates that on the whole the more difficult tests caused an

DIAGRAM 1

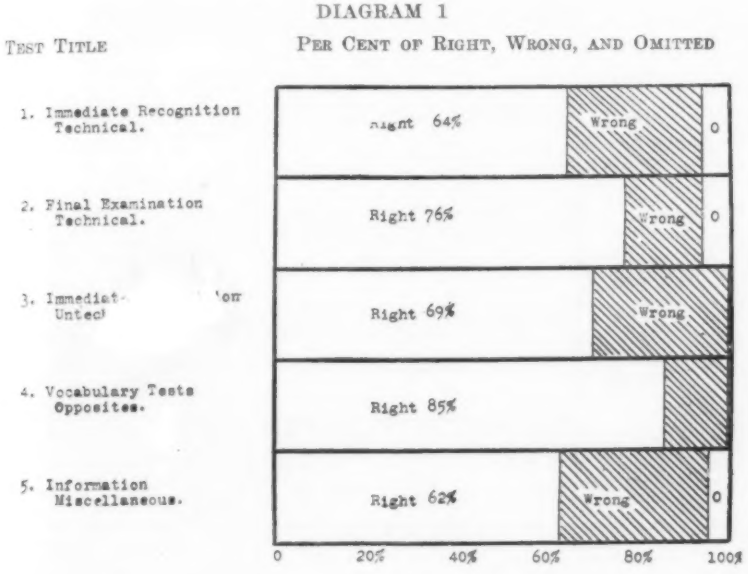


TABLE 2. DISTRIBUTION OF ACHIEVEMENT AND OF CONFIDENCE RATINGS

	1 Right		2 Wrong		3 Omitted		4 A		5 B		6 C	
Series I.	Med.	Q.	Med.	Q.	Med.	Q.	Med.	Q.	Med.	Q.	Med.	Q.
Test 1.....	.642	–.0056	.295	–.0034	.063	–.0011	.515	–.0071	.310	–.0036	.111	–.0020
Test 2.....	.764	–.0058	.272	–.0028	.062	–.0009	.659	–.0061	.202	–.0022	.076	–.0014
Series II.												
Test 3.....	.692	–.0051	.308	–.0027	.002	–.0001	.682	–.0060	.316	–.0032		
Test 4.....	.857	–.0068	.140	–.0025	.003	–.0001	.732	–.0054	.268	–.0022		
Test 5.....	.622	–.0072	.328	–.0047	.050	–.0012	.505	–.0077	.495	–.0050		

(This table may be read horizontally: In Test 1, the average student had 64.2% of all answers correct, 29.5% wrong, and 6.3% omitted. He also rated 51.5% of all his answers A, 31% B, and 11.1% C. In Series 2, *A* refers to "quite sure" and *B* to "doubtful". The figures following the – sign indicate the *Q* or semi-interquartile range of the median.)

average of less confidence, as shown by the total number of *A*'s. The total number of *A*'s, however, is not a good measure of the individual's use of the confidence ratings for some cautious but well informed persons use very few *A*'s, while others with very little real knowledge use many *A*'s. It was therefore decided to take the per cent of correct *A*'s, *B*'s, and *C*'s as the index of the way in which ratings were used. For example, if one student has 95 per cent of his *A*'s correct, and another student only 65 per cent

DIAGRAM 2

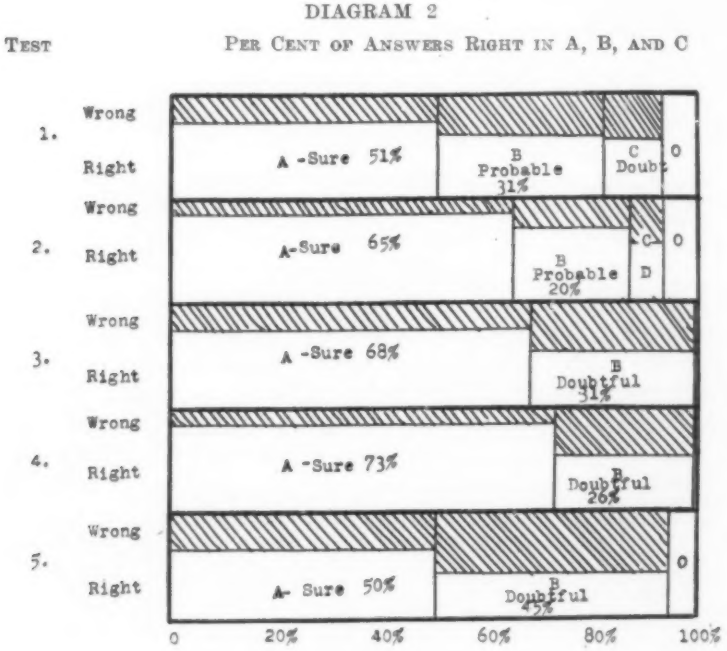


TABLE 3. CORRESPONDENCE BETWEEN ACHIEVEMENT AND CONFIDENCE AS SHOWN BY THE AVERAGE PERCENT OF ANSWERS RIGHT IN A, B, AND C.

	1 A	2 B	3 C	4 Omitted
Series I.	Med. Q.	Med. Q.	Med. Q.	Med. Q.
Test 1. Immediate Recognition	.736–.0052	.612–.0044	.571–.0043	.063–.0011
Test 2. Mid-year	.863–.0075	.702–.0036	.587–.0043	.062–.0009
Series II.				
Test 3. Immediate Recognition	.732–.0045	.547–.0051		.002–.0001
Test 4. Opposites	.867–.0045	.547–.0045		.003–.0001
Test 5. Information	.668–.0053	.416–.0049		.050–.0012

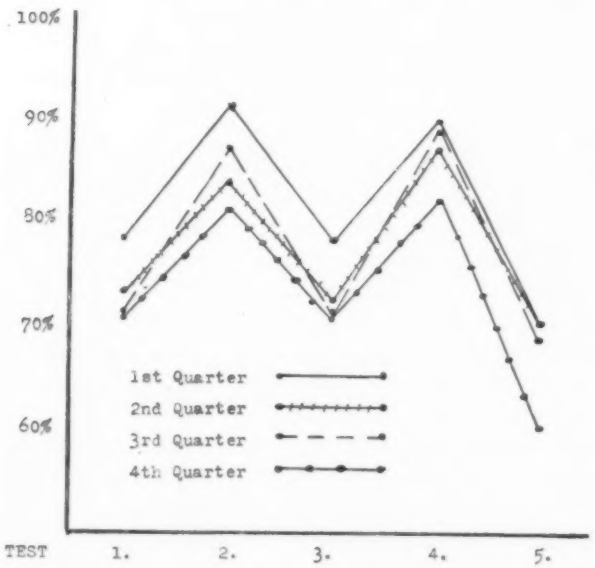
(This table may be read horizontally: The average student had on Test 1, 73.6% answers correct of those which he rated A or "quite sure", 61.2% among those rated B, and 57.1% among the C's.)

of his *A*'s correct, we can readily see that the second student is rating himself with much more confidence per unit of correct information than the first student.

Diagrams 2 and 3 and Table 3 show that the immediate tests of new material resulted in an average of 73 per cent of *A* ratings correct. The midyear and vocabulary tests each had slightly more than 86 per cent of *A*'s correct, while the information test resulted

DIAGRAM 3

PER CENT OF A'S CORRECT COMPARED TO MENTAL TEST SCORES



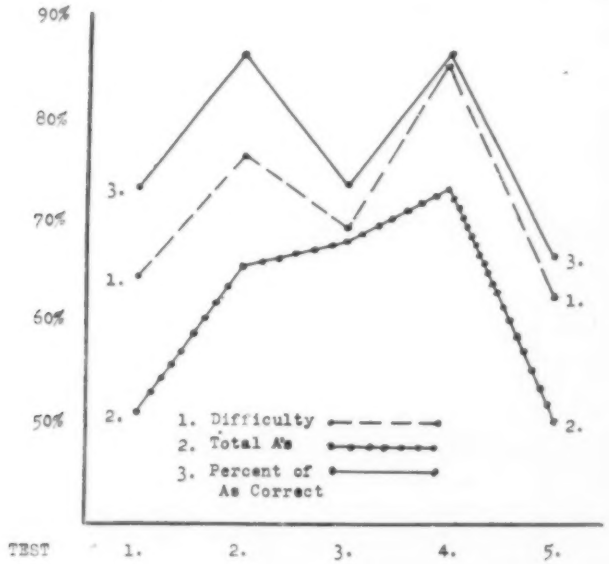
in only 66 per cent of *A*'s correct. The differences between the averages of tests 1 and 2, and 3 and 4, are very reliable (99 cases in 100 that the difference is greater than zero).* This indicates that there was a very consistent tendency in the use of ratings, and that in general the more difficult tests caused a smaller per cent of correct answers in all ratings. This is particularly true of the *A* ratings. Considering tests 1 and 2 the differences between the averages of the per cent of correct *A*'s, *B*'s, and *C*'s were 12.0, 9.0, and 1.6, respectively. Among the Group II results, the largest differences are 19.9 and 13.1 between the *A*'s and *B*'s, respectively.

* In 99 cases in 100 it is probable that the true difference is greater than zero. For discussion see Garrett, H. E., Statistics in Psychology and Education, p. 128.

Moreover, these *A* differences are all very reliable, while the *B* and *C* differences are less reliable (90 cases in 100 or less). This indicates that *A* was used less uniformly than either *B* or *C* in both series. One explanation which deserves further investigation is that the "halo effect" of feeling that a test in general is

DIAGRAM 4

DIFFICULTY, TOTAL "A" CONFIDENCE, AND PER CENT OF "A'S" CORRECT ON FIVE TESTS



easy or difficult influences the more confident ratings more than it does the more doubtful ones.

This table does not give conclusive evidence concerning the changes in the use of confidence ratings resulting from the substitution of two degrees, *A* and *B*, for three degrees, *A*, *B*, and *C*, because the tests are not clearly comparable. If, however, on the basis of the per cent of correct answers, we assume that test 1 was nearly equal in difficulty to tests 3 and 5, then a comparison of confidence ratings shows that the use of three steps in a scale, *A*, *B*, *C*, resulted in a smaller proportion of *A*'s than the use of two steps in the scale in the case of test 3, but not of test 5. The type of test is probably a causal factor here. The immediate recognition called for in test 1 was slightly more difficult than that of test 3, as shown by correct answers, but the proportion of uncommon and technical words was much greater in test 1 than test 3 (see

Table 1). The remote recognition of test 5 was more difficult than test 1, as shown by correct answers, but nearly equal to test 1 in uncommon and technical words. These results suggest that simple, untechnical language served to raise the average amount of confidence recorded per unit of correct information.

In comparing the *B*'s and *C*'s it is interesting to note that the *C*'s in tests 1 and 2 have a greater proportion of correct answers than the *B*'s in tests 3, 4, and 5. One might expect the opposite to be true, supposing that the *B* ratings of tests 3, 4, and 5 would include the *B*'s and *C*'s of tests 1 and 2. One probable explanation is that the students in tests 3, 4, and 5 were urged to answer every question, while this was not true of tests 1 and 2. The average of more than 6 per cent omissions in tests 1 and 2 was probably included in the *B* ratings of tests 3, 4, and 5, where practically no omissions occurred. Another possible explanation is that the students usually discriminate while using three choices more sharply than while using two choices. The *Q*'s of Table 3 support this theory, for the scattering is greater for the *B*'s in tests 3, 4, and 5 than for the *A*'s in tests 1 and 2. This evidence is not very conclusive, however, for the differences between these *Q*'s are reliable only to the extent of about 75 cases in 100.

While these facts are interesting comments on the average student, it will be still more useful to discriminate between the work of the better and poorer students. For this purpose the students were divided into quarters, according to their scholastic standing and their scores on the Thorndike college entrance examination. The results for the Thorndike test are given in Diagram 4, Table 4. The results for scholastic standing showed almost identical relationships.

An inspection of Table 4 and Diagram 4 will bring to light two main findings: first, the tendency for the better students to rate themselves less confident per unit of information than the poorer students, and second, the tendency for the extreme quarters of students to use the *A* ratings more uniformly than the *B* or *C* ratings in tests of immediate recall but not in tests of delayed recall.

The first tendency is illustrated by the fact that in every test the quarters of students standing higher in mental tests and scholastic records nearly always had a greater per cent of right *A*'s, *B*'s, and *C*'s than the lower quarters of students. Exceptions are seen in tests 1, 3, and 5, where the third quarter of students had more *A*'s correct than the second quarter, but these differences are small and unreliable. The differences between the *A* averages of

the first and fourth quarters are always fairly large and very reliable. There is practically no chance that the average student in the fourth quarter will have as large a proportion of correct *A*'s as the average student in the first quarter. An inspection of the correct *B*'s and *C*'s shows the same tendency, not quite so clearly marked. Table 5 gives the reliabilities of these differences.

A second conclusion may be drawn from Table 5: Scatter or spread of the distribution of the per cent of correct *A*'s is considerably greater for reviewed material or remote recall, tests 2, 4, and 5, than for immediate recall, tests 1 and 3. This indicates that with the passage of time the lower quarters of students were less aware of their errors than the upper quarters of students. In other words, the lower students lost their contacts between knowledge and confidence more quickly than the better students. This is

TABLE 4. CORRESPONDENCE OF CONFIDENCE WITH MENTAL TEST SCORES, AS SHOWN BY THE AVERAGE PERCENTS OF CORRECT ANSWERS IN A, B, AND C RATINGS.

		1 A		2 B		3 C		Omitted	
	Quarters	Med.	Q.	Med.	Q.	Med.	Q.	Med.	Q.
	1	.784	–.0099	.625	–.0076	.623	–.0078	.042	–.0002
	2	.717	–.0077	.620	–.0074	.575	–.0081	.066	–.0003
Test 1. Immediate Recognition	3	.731	–.0097	.622	–.0077	.573	–.0086	.076	–.0003
	4	.714	–.0129	.557	–.0097	.545	–.0075	.084	–.0001
Difference	1–4	.070	–.016	.068	–.012	.078	–.010	.042	–.000
	1	.912	–.0065	.717	–.0078	.600	–.0083	.041	–.0007
	2	.872	–.0083	.703	–.0081	.579	–.0087	.054	–.0011
Test 2. Mid-year	3	.843	–.0061	.689	–.0076	.564	–.0082	.063	–.0013
	4	.817	–.0078	.695	–.0094	.570	–.0064	.066	–.0009
Difference	1–4	.095	–.010	.022	–.002	.030	–.010	.025	–.000
	1	.788	–.0042	.611	–.0074				
	2	.716	–.0115	.631	–.0073				
Test 3. Immediate Recognition	3	.724	–.0090	.423	–.0082				
	4	.716	–.0120	.532	–.0073				
Difference	1–4	.072	–.015	.079	–.010				
	1	.899	–.0081	.633	–.0084				
	2	.892	–.0071	.551	–.0091				
Test 4. Opposites	3	.874	–.0087	.560	–.0092				
	4	.821	–.0094	.514	–.0113				
Difference	1–4	.078	–.012	.319	–.015				
	1	.700	–.0072	.455	–.0075				
	2	.685	–.0096	.375	–.0062				
Test 5.	3	.701	–.0078	.376	–.0081				
	4	.602	–.0152	.420	–.0094				
Difference	1–4	.098	–.013	.035	–.012				

(This table may be read horizontally as follows: On Test 1, the first quarter of students averaged 78.4%–9.9 of *A* answers correct, 62.5%–7.6 of *B* answers correct, etc. The fifth row may be read: On the Test 1, *A* ratings the differences between the averages of the first and fourth quarters was 7.1–1.6, the *B* ratings 6.8–1.2 etc. The reliabilities of these differences are given in Table 5.)

a very important point in the evaluation of evidence, and it deserves much more careful experimental treatment.

Another measure of the correspondence between confidence and achievement is found in the Pearson biserial r. By comparing school success, Thorndike tests, and success on the test in question with the total number of *A*'s, we find a nearly chance correlation

TABLE 5. RELIABILITIES OF THE DIFFERENNCES BETWEEN THE FIRST AND FOURTH QUARTERS.

	A		B		C	
	D/Q Diff.	Cases in 100	D/Q Diff.	Cases in 100	D/Q Diff.	Cases in 100
Test 1.	4.2	99.77	5.6	99.99	7.8	99.99
Test 2.	9.5	99.99	1.8	88.96	2.7	96.57
Test 3.	4.8	99.94	7.9	99.99		
Test 4.	6.5	99.99	15.2	99.99		
Test 5.	7.5	99.99	2.9	97.48		

(This table may be read as follows: In the Test 1, *A* ratings, the difference between the first and fourth quarters was 4.2 times its own *Q*, which means that there are 99.77 cases in 100 that the true difference is greater than zero.)

throughout. By correlating the per cent of correct *A*'s with these measures of achievement we find correlations of approximately .85 on the midyear examination, which was the longest and the most seriously attempted. All the other correlations fall between .35 and .65.

Summary and Conclusion

1. The purpose of this study was to ascertain the consistency of the use of self-confidence ratings on answers to true-false tests by college students. Two groups of sophomores and juniors, of about 125 men each, in two eastern colleges, reported their self-confidence by marking a symbol on each test item. One group used three degrees of confidence on immediate and midyear tests in the elementary psychology course, and the other group used two degrees of confidence on three special tests: immediate memory, same opposite, and miscellaneous information.

The results indicate that:

1. The average amount of confidence had a fairly constant relation to the average proportion of right answers.

2. Simple untechnical language probably served to raise the amount of confidence per unit of information.

3. On the whole, the ratings of "Fairly Sure, *B*", and "Doubtful, *C*", were used more consistently than the rating of "Very Sure, *A*", as indicated by the differences between the average percentages of correct *A*'s, *B*'s and *C*'s for the various tests. The *A*'s

the first and fourth quarters are always fairly large and very reliable. There is practically no chance that the average student in the fourth quarter will have as large a proportion of correct *A*'s as the average student in the first quarter. An inspection of the correct *B*'s and *C*'s shows the same tendency, not quite so clearly marked. Table 5 gives the reliabilities of these differences.

A second conclusion may be drawn from Table 5: Scatter or spread of the distribution of the per cent of correct *A*'s is considerably greater for reviewed material or remote recall, tests 2, 4, and 5, than for immediate recall, tests 1 and 3. This indicates that with the passage of time the lower quarters of students were less aware of their errors than the upper quarters of students. In other words, the lower students lost their contacts between knowledge and confidence more quickly than the better students. This is

TABLE 4. CORRESPONDENCE OF CONFIDENCE WITH MENTAL TEST SCORES, AS SHOWN BY THE AVERAGE PERCENTS OF CORRECT ANSWERS IN A, B, AND C RATINGS.

		1 A		2 B		3 C		Omitted	
	Quarters	Med.	Q.	Med.	Q.	Med.	Q.	Med.	Q.
	1	.784	–.0099	.625	–.0076	.623	–.0078	.042	–.0002
	2	.717	–.0077	.620	–.0074	.575	–.0081	.066	–.0003
Test 1. Immediate Recognition	3	.731	–.0097	.622	–.0077	.573	–.0086	.076	–.0003
	4	.714	–.0129	.557	–.0097	.545	–.0075	.084	–.0001
Difference	1–4	.070	–.016	.068	–.012	.078	–.010	.042	–.000
	1	.912	–.0065	.717	–.0078	.600	–.0083	.041	–.0007
	2	.872	–.0083	.703	–.0081	.579	–.0087	.054	–.0011
Test 2. Mid-year	3	.843	–.0061	.689	–.0076	.564	–.0082	.063	–.0013
	4	.817	–.0078	.695	–.0094	.570	–.0064	.066	–.0009
Difference	1–4	.095	–.010	.022	–.002	.030	–.010	.025	–.000
	1	.788	–.0042	.611	–.0074				
	2	.716	–.0115	.631	–.0073				
Test 3. Immediate Recognition	3	.724	–.0090	.423	–.0082				
	4	.716	–.0120	.532	–.0073				
Difference	1–4	.072	–.015	.079	–.010				
	1	.899	–.0081	.633	–.0084				
	2	.892	–.0071	.551	–.0091				
Test 4. Opposites	3	.874	–.0087	.560	–.0092				
	4	.821	–.0094	.314	–.0113				
Difference	1–4	.078	–.012	.319	–.015				
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varied from 66 per cent to 86 per cent correct, the *B*'s from 61 per cent to 70 per cent, and the *C*'s from 57 per cent to 58 per cent. An explanation which deserves further investigation is that a "halo effect" of feeling that a test is easy or difficult influences the *A* ratings more than the *B* and *C* ratings.

4. The highest quarter of students, as indicated by a Thorndike mental test, had a reliably smaller amount of confidence per unit of information than the lowest quarter of students. There is practically no chance that the average student in the fourth quarter will have as large a proportion of correct *A*'s as the average student in the last quarter. The same facts obtain for quarters as indicated by scholastic standing.

5. The comparison of immediate and delayed or review tests shows that the lowest quarter of students tended to lose their connection between knowledge and confidence more quickly than the better students.

University of Michigan.

LITERATURE CITED

1. Fullerton and Cattell. On the Perception of Small Differences. Publications of the University of Pennsylvania, 1892, 2.

2. Henmon, V. A. C. The Relation of the Time of a Judgment to Its Accuracy. Psychol. Rev., 1911, 18, 186–201.

3. Hollingworth, H. L. Experimental Studies in Judgment. Archives of Psychology, 1913, 29.

4. Ruch and Degraff. Corrections for Chance, and "Guess" vs. "Do Not Guess" Instructions in Multiple Response Tests. Jour. of Ed. Psychology, April, 1927, p. 226.

5. Trow, W. C. The Psychology of Confidence. Archives of Psychology, 1923, 67.

6. West, Paul V. A Critical Study of the Right-Wrong Method. Journal of Educational Research, Vol. 8, 1–9, 1923.

7. Wood, B. D. Measurement of College Work. Jour. of Ed. Res., 6, 301–334, Sept., 1920.

8. Wood, E. P. Improving the Validity of College Achievement Tests. Jour. of Ed. Psych., Jan., 1927, p. 18.

THE APPLICATION OF EXTROVERSION-INTROVERSION TESTS TO THE INSANE

By KATHERINE J. CAMPBELL

THERE has long been a generally accepted theory by psychiatrists, as voiced by Dr. Carl T. Steen of the Oklahoma Central State Hospital for the Insane, that Dementia Praecox patients would tend to be introverts and Manic Depressive patients would tend to extroversion, these being the two main types of functional disorders.

On seeing Miss Heidbreder's[1] results of applying an introversion-extroversion test to normal individuals, it was thought to be not only interesting, but desirable to apply the same test to insane individuals, to see in what respect they would differ as a group from normals, and in what respect the various groups would differ one from the other.

Miss Heidbreder used Freyd's list of 54 introvert traits and gave the following instructions: "Below is a list of 54 personal traits. In rating yourself or others place a plus before each trait that characterizes yourself or the person you are rating; place a minus (—) before each trait that seems to be replaced by its opposite; place a question mark (?) before each trait concerning whose presence or absence you are in doubt." The score given each paper was the algebraic sum of the plus and minus ratings.

For use with the abnormal, the same instructions were given and the experimenter was present at the time of giving the test in order to answer any questions which might arise and to personally supervise every step of the test. The individuals taking the test were selected on the basis of a high school graduation, in order to make them as comparable to Miss Heidbreder's group of college students as possible, but in my opinion *any well oriented insane individual would be qualified to take the test.* Two of the four physicians at the hospital who were familiar with the patient's history and habits gave associates ratings on each.

The group was too small to draw any very definite conclusions from, but it may serve as an index of the value of more work in this direction.

The test was changed slightly as to wording, in order to adapt

[1] *J. Abnormal and Social Psychology*, No. 2, July, 1926. Vol. XXI.

it to abnormal conditions. One trait was omitted, namely the one applying to males only. A sample test is given in the following pages. The traits were asked in question form using second person singular.

1. As in Miss Heidbreder's study, the first point to be noted is that the individuals rated did not fall two distinct classes, the introverts and the extroverts, but into a single group which takes the general form of a normal probability curve. The data is given in the following table:

Ratings Class-Intervals	Self		Associates		Total	
	No.	Per cent	No.	Per cent	No.	Per cent
+35–39	..	...	1	1.85	1	.24
+30–34	..	...	..	...	..	...
+25–29	1	3.7	2	3.7	3	3.74
+20–24	2	7.4	4	7.4	6	7.4
+15–19	..	...	10	18.51	10	12.3
+10–14	3	11.1	5	9.27	8	11.1
+ 5– 9	3	11.1	5	9.27	8	11.1
+ 0– 4	4	14.8	3	5.56	7	8.73
— 1– 5	4	14.8	7	12.96	11	13.72
— 6–10	5	18.5	8	14.82	13	16.24
—11–15	1	3.7	3	5.56	4	4.97
—16–20	3	11.1	..	...	3	3.74
—21–25	..	...	1	1.85	1	1.24
—26–30	..	...	2	3.7	2	2.48
—31–35	..	...	1	1.85	1	1.24
—36–40	1	3.7	1	1.85	2	2.48
—41–45	..	...	..	...	..	...
—46–50	..	...	1	1.85	1	1.24
	27	100	54	100	81	100

However, the groups scores were distributed over a greater range than Miss Heibreder's table of normal individuals; from plus 39 to minus 50 with 1.24 per cent of the group in each of the extreme classes PE_{41} 10.4, whereas the normal group was distributed from plus 24 to minus 45, with but .16 per cent of the group in each extreme, PE_{41} 7.34.

2. The average of the insane group was plus 1.47 PE ± as compared with the average of the normal group of minus 11.25 ±.30. The average for the self-ratings was minus .52, while the average for the *associates ratings* was plus 2.48.

$$P.E._D = \frac{2.022 \quad D(-11.25) - (+1.47)}{P.E._D} = 6.23.$$

3. (a) The various groups differed each from the other according to an average obtained from self and associates' ratings as follows:

Paranoia	plus	8.444	number was	3	S. D. 6.14
Dementia Praecox	plus	5.328	number was	15	S. D. 8.95
Epileptic	plus	4.333	number was	1	
Psychoses	minus	9.	number was	1	
Manic Depressive	minus	16.222	number was	4	S. D. 1.09
Paresis	minus	14.999	number was	2	S. D. 5.18

The first three would be introverts and the last half would be extroverts according to this rating scale.

(b) The various groups differed from each other according to an average obtained from self ratings, as follows:

Paranoia	plus	18	No.	3	S. D. 1.
Dementia Praecox	plus	4.9	No.	15	S. D. 1.5
Epileptic	plus	2	No.	1	
Psychoses	minus	7	No.	4	S. D. 8.1
Paresis	minus	16.3	No.	3	S. D. 1.5

(c) The various groups differed the one from the other according to an average obtained from a physician who was most familiar with the case as follows:

Paranoia	plus	16.5	No.	4	S. D. 4.4
Dementia Praecox	plus	8.6	No.	15	S. D. 1.72
Epilepsy	plus	5	No.	1	
Psychoses	minus	7	No.	1	
Manic Depressive	minus	9.5	No.	4	S. D. 15.
Paresis	minus	15.6	No.	3	S. D. 1.8

(d) Irrespective of the type of rating the average for the group tends to be the same; the paranoias tend to be the most introverted, the schizophrenics tend to be slightly less so, and the epileptics tend to be still less so, but more than the average for the whole group or for the group of normals; these having a diagnosis of psychosis the least extroverted of the group of extroverts, the manic depressives (which includes both manic and depressive stages) less extroverted than the normal group and those in the paretic group being more extroverted than the normal group.

4. Agreement present in different kinds of ratings:

(a) The correlation between the ratings of Self and Associates was plus .37. The number of cases was 27. and lower than the correlation found between Miss Heidbreder's groups which was plus .55.

(b) The correlation between the first and second associate's ratings was slightly higher, plus .39. The correlation for the normal group in this case was plus 40.

(c) Evidently the ratings are not in close agreement with each other perhaps due to the insanity of the individuals taking the test; and to the fact that the physicians were not always sure of the traits of the individual, not knowing them well.

A NEW DIAGNOSTIC TEST FOR INTROVERSION–EXTROVERSION

By CLARENCE A. NEYMANN, A.B., M.D. and
KENNETH D. KOHLSTEDT, PH.B., M.A.*

THE concept of introversion-extroversion was first formulated by Jung.(1) He states that in human psychology there exist typical group distinctions apart from individual differences. Two types are especially clear. These he terms "the Introversion and Extroversion Types". Extroversion is defined as an outgoing interest from the subject to the object and introversion as a recession of interest from the object toward the subject. If we amplify this a little the typical extrovert is a happy, talkative, active individual with tendencies toward swings of mood, while the introvert possesses a rather quiet, thoughtful, and reserved personality with an inclination toward autistic thinking. This theory has been of inestimable value in fixing the attention of psychiatrists and psychologists upon this problem and in paving the way for work which has since been done in this field.

It is hardly necessary to discuss the importance of introversion and extroversion to the incidence of manic-depressive insanity, schizophrenia, hysteria, neurasthenia, and psychasthenia. We know that manic-depressive insanity and hysteria are typical extrovertive phenomena, while schizophrenia, psychasthenia, and neurasthenia belong generally to the introvertive group. Kretschmer (2) has even attempted to connect introversion and extroversion with certain physical types: pyknics, athletics, and esthenics. The great difficulty has always been in making objective instead of subjective studies of patients or individuals selected as representative of their type. Rorschach (3) has devised a technique for this purpose. In our opinion it is very complicated and cumbersome as well as being subject to error because of the necessary interpolation of the examiner. In general, it consists in the noting down and grouping of responses obtained by allowing the subject to observe symmetrical ink blots. Under the supervision of Dr. J. B. Morgan, Travis (4) has also made an attempt to classify individuals by a selective question method. Finally, Bathurst,(5)

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in an unpublished work founded on the work of Travis, has made a similar attempt. In formulating our test we have used some of this older material.

Knowing full well that it was desirable to have a simple test which would have clinical and general significance, we determined upon one hundred statements which apparently had no implication of right or wrong. Half of these were theoretically pleasing to the extrovert while the others were theoretically pleasing to the introvert. These were then standardized by testing one hundred typical manic-depressives and one hundred typical schizophrenics. The clinical material was obtained from the Cook County Psychopathic Hospital, from the state hospitals at Elgin, Kankakee, and Chicago, and from other sources; the only criterion being that the patient was in either a typical manic state, a depressed state, or in a typical schizophrenic state with hebephrenic, catatonic, simplex, or paranoid trends. The original one hundred questions were then reduced to fifty and the following questions now comprise the test in its present form:

THE NEYMANN-KOHLSTEDT DIAGNOSTIC TEST FOR INTROVERSION-EXTROVERSION.*

Name ..... Occupation ..... Age .....

This test is composed of fifty statements, each being followed by the words "Yes" and "No". There is no implication of right or wrong in any of the statements and you are asked to consider them from the viewpoint of personal *like* or *dislike*. Read the first statement and if you like the idea it expresses draw a line under "*Yes*". If you dislike it draw a line under "*No*". Proceed in the same way with the rest of the statements.

1. Be by yourself a great deal.....	Yes	No
2. Think of life in terms of pleasure.....	Yes	No
3. Always be calm and collected.....	Yes	No
4. Have a great deal of confidence in others.....	Yes	No
5. Think or dream of what you will do five years from now.....	Yes	No
6. Stay at home during a social affair.....	Yes	No
7. Work with many people around you.....	Yes	No
8. Do the same kind of work all the time.....	Yes	No
9. Enjoy social gatherings just to be with people.....	Yes	No
10. Think a great deal before deciding anything.....	Yes	No
11. Accept suggestions rather than working them out for yourself..	Yes	No
12. Quiet rather than exciting amusements.....	Yes	No
13. Dislike having people watch you.....	Yes	No
14. Quit a tiresome task.....	Yes	No
15. Save money rather than spend it.....	Yes	No
16. Seldom (Infrequently) analyze your thoughts or motives.....	Yes	No

* (Distributed by C. H. Stoelting Co., Chicago, Ill.)

17. Indulge in reverie (day-dream) or thought	Yes	No
18. Have people watch you do things that you do very well	Yes	No
19. Let yourself go when angry	Yes	No
20. Work better when people praise you	Yes	No
21. Have excitement	Yes	No
22. Often meditate and think about yourself	Yes	No
23. Be a leader at a social affair	Yes	No
24. Speak in public	Yes	No
25. Do the things that you dream about (day-dream)	Yes	No
26. Rewrite social letters	Yes	No
27. Get things done very quickly rather than being slow and sure in movement	Yes	No
28. Think a great deal	Yes	No
29. Be able to express your keenest feelings (joy, sorrow, anger, etc.)	Yes	No
30. Pay little attention to details	Yes	No
31. Be exceedingly careful in meeting people	Yes	No
32. Associate freely with people holding views opposed to your own	Yes	No
33. Puzzles	Yes	No
34. Act on suggestions quickly rather than stopping to think	Yes	No
35. Read about rather than do a thing	Yes	No
36. Enjoy the story more than the way it is written	Yes	No
37. Keep a personal diary	Yes	No
38. Keep quiet when out in company	Yes	No
39. Act on the spur of the moment	Yes	No
40. Dislike thinking about yourself	Yes	No
41. Always plan out work before you begin it	Yes	No
42. Change from one type of work to another frequently	Yes	No
43. Avoid trouble rather than face it	Yes	No
44. Believe that rumors are important	Yes	No
45. Confide in others	Yes	No
46. Distrust people you have just met until you get better acquainted	Yes	No
47. Study others rather than yourself	Yes	No
48. Spend your vacation at some quiet place rather than at a lively resort	Yes	No
49. Change your opinions easily even when formed	Yes	No
50. Take an active part in all conversations going on around you	Yes	No

No. Right..... No. Wrong.....

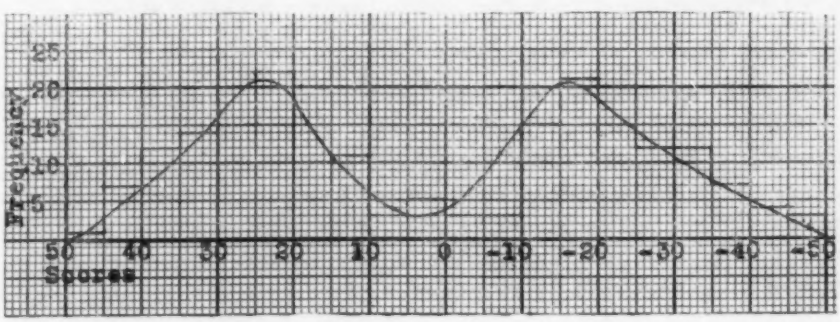
Score = Right..... minus Wrong..... = ...

A perusal of the test and its directions shows fifty statements. The subject is asked to express his personal like or dislike for each. On the sheet used for scoring the test, answers to these statements are underlined as a typical extrovert should answer them. The answers are scattered and alternated without definite sequence, the extrovertive answers being considered correct for purposes of

the test. Needless to say, in giving the test, the subject must not see this key. It is best to note the patient's answers upon an unmarked copy or if the test be given to a normal individual to hand the subject such a copy and ask him to fill it out in accordance with the directions. The number of correct answers are then counted and the number of incorrect answers are subtracted from them. If the subject expresses neither like nor dislike for a statement or underlines both answers, this statement is not counted. An introvert should have a minus score and the maximum score possible for an introvert will be minus fifty while the extrovert should have a plus score with plus fifty as the extrovert's maximum score. For example, if thirty-five questions are answered correctly (*i.e.*, extrovertively) and three questions are not answered, the score would be thirty-five minus twelve (or the number of questions answered incorrectly) or plus twenty-three. On the other hand, let us suppose forty questions were answered incorrectly and ten were answered correctly. The score would then be minus thirty.

In gauging a patient's answers, though we have attempted to exclude the ethical element of right and wrong from the test, the subject may nevertheless answer that he has been taught to consider certain things as wrong (ex. Question 19. Let yourself go when angry) yet he would like to do the converse. In such cases what he would like to do counts, not what he feels he ought to do. This can be explained to an intelligent subject but it is clear that in most cases it is much better to read the test to the patient being examined rather than to have him mark his own choices. A trained psychologist or psychiatrist can immediately tell whether he is dealing with an ethical or an actual like or dislike as he notes the subject's answers. We believe, however, that even in untrained hands the test is so accurate that fair results are obtainable.

Our results with the test are best shown in the accompanying graph and table:



Manic-depressives		Schizophrenics	
Score	Frequency	Score	Frequency
50 to 40	8	—50 to —40	7
40 to 30	26	—40 to —30	19
30 to 20	37	—30 to —20	32
20 to 10	21	—20 to —10	36
10 to 0	7	—10 to 0	5
—6	1	1	1

in which the smoothed curve shows the probable distribution of scores for any group large enough to be a random sampling. The superimposed block diagram shows the scores and the frequencies which were actually obtained. This diagram is simplified still further by studying the table below it. The figure on the left shows the large group of manic-depressives who scored in plus numbers, a predominance scoring between twenty and thirty; the figure on the right presents the schizophrenics with the predominance of scores ranging between minus fifteen and minus twenty-five. As previously stated, two hundred patients were examined. Six schizophrenics gave scores ranging from plus one to minus ten, only one scoring plus one. Eight manic-depressives gave scores ranging from minus six to plus ten, only one giving a minus score and this as a result of prejudiced responses. We therefore record two failures and twelve borderline results. In a total of two hundred patients examined that is one per cent failure, six per cent ill-defined reactions, and ninety-three per cent who gave scores exactly corresponding to their reaction types. The patients were examined, for the most part, without a knowledge of the clinical diagnosis.

Sometimes patients sent to us with a diagnosis of dementia precox proved to be typical manic-depressives by the test. An investigation in every case showed that some error either in name or diagnosis had occurred. The hospital staff diagnosis was always accepted as the final criterion. As the work progressed we learned to rely so definitely on the test result that whenever a bizarre score occurred we immediately traced back names and initials, checked this with histories and located the trouble. It is peculiar that depressions even when so deep as to force a slowing down of the entire psychomotor activity will give typical extrovertive responses. We were often surprised at the affirmative reply of patients who were so depressed that they would hardly talk, to question fifty, "Take an active part in all conversations going on around you", or at a negative reply to question forty-eight, "Spend your vacation at some quiet place rather than at a lively

resort''. The depressed or elated schizophrenics, on the other hand, gave typical introvertive responses.

As far as this test has been applied to normal individuals, these same facts seem to hold true. We have tested over two hundred normals and though we are dealing purely with presumptions, namely what other individuals think about these subjects, we find that we obtain a similar bimodal curve, a grouping of normals into a predominance of introvertive and extrovertive traits with comparatively few borderline cases. It is our intention to investigate this phase of the question in greater detail, to compare our results with results obtained on normals by the Travis (6) audiometer method, the Rorschach test, and personal opinions of friends and acquaintances. Further we intend to study the relation of introversion and extroversion to intelligence and to Kretschmer's types and theories.

We wish to express our gratitude to Dr. John J. B. Morgan of Northwestern University who greatly aided us by his help and advice, to the superintendents, assistant superintendents, and physicians of the state institutions mentioned, and especially to Dr. Edward A. Foley of Chicago State Hospital.

Summary

1. A new test for introversion-extroversion is presented.

2. This test has been standardized on one hundred cases of schizophrenia and one hundred cases of manic-depressive insanity.

3. The results coincide in ninety-three per cent of the cases with those obtained by prolonged clinical observation.

4. Similar results are obtained by applying the test to two hundred normal individuals.

REFERENCES

1. C. G. Jung, *Psychological Types*, Harcourt, Brace & Co., New York, 1923.
2. Kretschmer, Ernst, *Physique and Character*, Harcourt, Brace & Co., 1925.
3. Rorschach, Dr. Herman, *Psycho-Diagnostik*.
4. Travis, R. C., ''Measurement of Fundamental Character Traits'', *Journal of Abnormal and Social Psychology*, 19:400–20, Jan., 1926.
5. Bathurst, J. E., *The Diagnostic Temperament Test*, Unpublished.
6. Travis, Lee E., ''Studies in Dissociation'', *Journal of Experimental Psychology*, 5:338 *ff.*, Oct., 1922.

Travis, Lee E., ''Suggestibility and Negativism as Measured by Auditory Threshold During Reverie'', *J. Ab. & Soc. Psych.*, 18:350–68.

Travis, Lee E., ''A Test for Distinguishing Between Schizophrenia and Psychoneuroses'', *J. Abnormal and Social Psych.*, 19:283–98.

A CLINICAL TEST TO DETERMINE EMOTIONAL TRENDS AND EMOTIONAL BALANCE

By CLARA HARRISON TOWN, Ph.D.

DIRECTOR, DEPARTMENT OF PSYCHOLOGY, CHILDREN'S AID SOCIETY, BUFFALO, N. Y.

THE method here presented of analyzing the emotional make-up of an individual by means of tests was evolved in the attempt to gain an understanding of the personal characteristics contributing toward the behavior of the adolescents and adults brought for study and guidance to the psychological clinic of the Children's Aid Society of Buffalo.

A large proportion of the older boys and girls and adults are brought on account of conduct difficulties—sex offenses, lying, stealing and rebellion against the authority of the school by truancy, or against the authority of the home by running away.

A review of these conduct problems shows that they occur in individuals of all grades and many types of mental development. The percentage of feebleminded among the group of boys and girls who presented conduct difficulties amounts to twice the percentage of feebleminded among the total number examined, but in spite of this more than seventy-five per cent of those presenting conduct difficulties rank distinctly above the highest mental level of the feebleminded group. In our experience the intelligence level or intelligence type considered alone gives no indication of the general conduct status of the individual.

If we wish to express graphically the intelligence status and the behavior status of an individual and use a vertical line to express at varying heights the varying grades of mental ability, the behavior status might be expressed by a horizontal line placed at the level of any particular mental development but varying in length according to an entirely different set of unit values than those governing the height of the mental level. In such an arrangement there would be no correspondence between the extent of the vertical and horizontal lines.

In talking over their problems these maladjusted individuals invariably give as the root of their difficulties some emotional upset or excitement or unrest; hate, love, fear, shame, as the case may be. The following are typical examples:

One boy of fine intelligence and excellent language ability

flunked for several successive years in French. When we discovered beyond the chance of a doubt that he was more than capable of success in French he grimly and intensely stated, "I hate the teacher and I shall do nothing for her."

A Polish boy who had been left in Poland when his parents and older brothers and sisters came to America and who joined them in Buffalo some years later, repeatedly ran away from his home. Finally when he realized he would be compelled to remain at home, he attempted suicide. When placed in a Polish farm home with surroundings more like those to which he had been accustomed his unhappiness disappeared. The trouble was that his Americanized brothers and sisters made fun of his Polish talk and ways and he was sensitive and ashamed before them.

A young man who has developed many obsessions and repressions admits that he has been so much ridiculed that he can no longer behave naturally because he fears doing something ridiculous and bringing more ridicule upon himself.

It seemed to us that these people were right in emphasizing the importance of their emotional life in relation to their conduct difficulties, and it also seemed to us that we should be able to guide them much more effectively on the basis of an analysis of their emotional reactions which would uncover their emotional trends and their emotional strengths and weaknesses.

Such an analysis we decided should be based on the results of test material because in our practice we find that the test method breaks down the self-conscious reserves quite naturally and rapidly and leads to a much fuller self-revelation than the free conversational method employed so generally by psychiatrists.

For such a test it was obviously necessary to include as subject matter as complete a set as possible of the simpler emotional reactions. We selected as a basis for study the emotions listed by Professor McDougal as primary: fear, disgust, curiosity, anger, elation, subjection, tenderness, sociability and a love of possessions. To these we added humor as being a quality most essential to the smooth running of a life.

It seemed most fitting to use Professor McDougal's list of emotions, not only because it appealed to us as the most practically applicable of any we knew, but also because Professor McDougal considers these emotions in conjunction with certain tendencies to action which he finds their infallible accompaniments the underlying forces of conduct and builds up from them in their relations

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between themselves and with the life of ideas the most complex and ideal motives which govern the conduct of men.

In planning the test we rejected the method of staging in the laboratory certain situations designed to produce emotion, the method generally used in the study of the physiological expressions of emotion, for two reasons:

1. Previous experience with such attempts has led us to conclude that although emotional reactions can undoubtedly be produced in this way just what emotion is produced is doubtful because the total laboratory situation contributes so much to the stimulus that it undoubtedly modifies the emotional response as well.

2. The recovery from an emotional reaction is not so immediate and so complete as to make possible at one sitting or even at two sittings a study as comprehensive as we wished to make.

We adopted instead the method of presenting verbally to the subject descriptive statements of possible happenings, asking him to imagine himself as experiencing them and to state how he would feel and what he would do under these conditions.

We arranged several series of descriptive situations, each series designed to evoke one of the emotional reactions listed above. These situations are presented verbally one by one and the subject is given as much time as he desires for his response. Frequently he is moved to talk very freely, illustrating from past experience and giving many valuable personal data in addition to those referring to the immediate situation. These responses are recorded and the examiner judges whether any emotion and if so what emotion or emotions the response discloses.

This method involves two obvious sources of error:

1. The subject's responses do not represent what he would actually do in the imaginary situations, they only indicate what he thinks he would do and in some cases probably only what he would like to think he would do. This source of error we fully recognize, and so far we have not been able to eliminate it. We have, however, been quite impressed by the apparent frankness and willingness to admit what seemed to the subjects themselves grave weaknesses.

2. The psychologist is the judge of what emotions are indicated by the verbal responses of the subject. This is a very real source of error. There seems to be no method of recording the response in terms of emotion without trusting to someone's judgment and the psychologist by his training is apparently best fitted to make

these interpretations. The possibility of error would be greatly increased by leaving the interpretation to the subject, and in fact this plan is practically impossible with subjects who are ignorant of the psychology of the emotions.

In spite of these two grave sources of error we decided to try out the test in this form. The results secured from the first sixty-seven subjects apparently justify us, as they have proved quite valuable in securing an understanding of the personalities studied.

The test was tried out on sixty-seven adults, varying in age from eighteen to sixty and including both sexes. The results were critically analyzed and those situations which proved to be lacking in discriminative value, which did not bring out individual differences of response, were eliminated from the test. One whole series, love of possessions, was eliminated for this reason. The material used in it was apparently not wisely chosen. No substitute has been arranged. The humor series was also omitted. Humor was found to be particularly difficult to handle, both in the selection of material and in the grading of responses and we have eliminated it from this study with the purpose of treating it more thoroughly in a later one.

In its final form the test consists of eighty described situations; ten designed to elicit fear, ten to elicit disgust, ten curiosity, ten anger, ten elation, ten subjection, ten tenderness, ten sociability. Each of the situations finally used evoked in the majority of those examined one particular emotion, but each series also aroused in some individuals other emotions and in still other individuals no emotional response whatever.

If we class the test situations under the emotion each situation most usually produced we find that among the responses to each class of situation stimulus the other emotions are evoked as follows:

Fear situations aroused all the emotions listed excepting disgust.

Disgust situations aroused all the emotions listed excepting sociability and subjection.

Curiosity situations aroused all the emotions listed excepting anger, sociability and subjection.

Anger situations aroused all the emotions listed.

Elation situations aroused all the emotions listed excepting disgust, curiosity and sociability.

Subjection situations aroused all the emotions listed.

Tenderness situations aroused all the emotions listed excepting disgust, and curiosity.

Sociability situations aroused all the emotions listed excepting fear, disgust, anger and subjection.

The method used in giving the test is as follows: The examiner states to the subject, "I am going to describe to you certain possible happenings and I want you to imagine yourself as experiencing each one and to tell me just how you would feel and how you would act." The examiner records the response and judges what emotion or emotions are involved. A scoring card is used on which are printed at the left in a column the names of the eight emotions studied. The results are scored upon it as follows: If only one emotion is indicated in a response one point is scored after the name of that emotion, if more than one emotion is indicated one-half is scored after the name of each emotion indicated. If the response seems entirely intellectual and devoid of emotion, minus is scored after the emotion usually evoked by the question. The summing up of these points gives differential score for each emotion studied and the sum of these differential scores gives the total emotional score.

We have scored such records for sixty-seven individuals and we have arranged the results in graphic form which shows clearly for each individual the number of times each emotion was elicited by the test. The scores for each emotion on each individual record differ markedly and variously among themselves and the total emotional score secured varies from twenty-eight to seventy-six.

The following table presents a classification of the responses of the entire group, the horizontal rows recording these responses according to stimulus series, the vertical column recording them according to emotional responses.

Series	Fear Responses	Disgust Responses	Curiosity Responses	Anger Responses	Elation Responses	Subjection Responses	Tenderness Responses	Sociability Responses	Total Em. Responses	Total Non-em. Responses	Total Responses
A. Fear	359+	0	17	3	15	½	11	3+	409	213	622
B. Disgust	3+	312+	9	3+	6	0	16	0	351	151	502
C. Curiosity	41	2	389+	0	2	0	½	0	436	116	552
D. Anger	2+	6+	6+	406	67	34+	16	5	544	69	613
E. Elation	1+	0	0	5	402	117	2	0	527	85	612
F. Subjection	½	5	6+	12	75+	119	16	1	315	29	344
G. Tenderness	½	0	0	9+	7+	1+	437	0	456	94	550
H. Sociability	0	0	2+	0	2	0	½	337	342	230	572
Total Responses	409	326	431	439	577	352+	499	346+	3380	957	4337

The significance of the test, however, is not evidenced in this mass presentation of results. Its real significance appears in the analyses of the individual graphs which show marked and varied groupings of emotional trends. A large number of graphs, forty, show their greatest height at elation. In these graphs the other traits are variously combined with elation, curiosity is next in frequency in eleven graphs, anger in ten, fear in seven and tenderness in six.

Tenderness leads in frequency in eight graphs with elation, subjection, anger and fear as next in frequency. Fear leads in only one graph, anger leads in three and subjection in nine. In the graphs in which subjection leads tenderness, fear and sometimes anger are closely associated. Curiosity leads in four graphs and sociability in two.

Fifteen of our graphs were obtained from illegitimate mothers. In three of these subjection leads, in two instances it is closely associated with fear and in two with tenderness. In four graphs tenderness leads, closely followed in three by subjection and by fear. Elation leads in five graphs closely followed in all by tenderness and in four by fear. Curiosity and anger lead in the other three graphs, fear following closely in two. The dominance of subjection, tenderness and fear in the illegitimate mother curves is very pronounced and we think quite significant. See graphs 3, 4 and 5.

We append a list of situations used in giving the test, ten in each of eight series as follows: series A—Fear, B—Disgust, C—Curiosity, D—Anger, E—Elation, F—Subjection, G—Tenderness, H—Sociability. We also present a few graphs illustrative of the varying types of graph secured.

SERIES A.

1. If you found yourself on a sinking ship in mid-ocean far distant from any chance of help, how would you feel and what would you do?
2. Think of yourself as being attacked on the street by a fierce dog. How would you feel and what would you do?
3. Imagine yourself out in a severe electric storm. How do you feel and what would you do?
4. Think of yourself as being told that tomorrow it would be necessary for you to sustain a severe operation without an anasthetic of any kind. How would you feel and what would you do?
5. Suppose you were told that you must die tomorrow from natural causes. How would you feel and what would you do?
6. Think of yourself as alone in the house at night and hearing mysterious noises. How do you feel and what do you do?
7. Think of yourself as being asked to speak before an audience tomorrow. How would you feel and what would you do?
8. Think of yourself as acting impulsively. Have you any fear of doing so and of regretting it later?

Think of yourself as living your life practically alone, not marrying. What is your reaction?

10. Think of yourself as being uncertain in regard to your work and your income. What is the effect upon you?

SERIES B.

1. Imagine yourself touching a snake, a toad, a roach. How would you feel and what would you do?

2. Think of yourself as being in the company of someone who is disfigured by dreadful sores on the face and hands. How would you feel and what would you do?

3. Imagine yourself seeing blood flowing freely from a wound. How would you feel and what would you do?

4. Think of yourself as a visitor in Paris. It is customary there to eat horse flesh and to eat snails. Would you do so?

5. Think of yourself at a vaudeville show of a vulgar, sensual type. What is your reaction?

Think of yourself as reading such books as "Flaming Youth", "Plastic Age", "Jergen", "Ulysses". What is your response?

6. Think of yourself as sitting at the table with a person eating gluttonously and noisily. How do you feel and what do you do?

7. Imagine a person who constantly tries to win his way through life by bluffing, by fourflushing. What is the effect upon you?

8. Think of yourself as listening to a crude performance, musical, dramatic or literary. What is your response?

9. Think of yourself in the company of a seasick person. What is the effect upon you?

10. Think of yourself as using an old and dilapidated book from a circulating library which is grimy from the use of many hands. What is the effect upon you?

SERIES C.

1. Suppose someone would enter this room and hand you a telegram. How would you feel and what would you do?

2. Think of yourself as having a puzzle to solve. How would you feel and what would you do?

3. On the night of a presidential election, or a popular football or baseball game, what do you do?

4. Think of yourself as hearing of a new scientific discovery, or a new and much talked of book. Is your effort to learn more concerning the discovery and to read the new book?

5. Think of yourself as being invited to a ride in an aeroplane this afternoon. How would you feel and what would you do?

6. Think of yourself as listening to talk concerning foreign lands and marvels of nature. What is your reaction?

7. Think of yourself as listening to talk concerning life after death. What is your response?

8. Think of yourself as passing the desk of a friend on which letters lie open. Would you have an impulse to read them?

9. Suppose someone comes to you and talks scandal. Do you encourage them?

10. Think of yourself as reading detective stories, as reading serial stories. What is your response.

SERIES D.

1. Suppose someone would purposely give you a rude push or slap. How would you feel and what would you do?

2. Suppose that someone purposely destroyed one of your treasured possessions. How would you feel and what would you do?

3. Imagine someone publicly insulting your mother or someone dear to you. How would you feel and what would you do?

4. Imagine that you heard that someone was plotting against you. How would you feel and what would you do?

5. Imagine yourself hearing that someone had misquoted you maliciously. How would you feel and what would you do?

6. Think of yourself as being interfered with in your plans or acts by someone without authority over you. How would you feel and what would you do?
7. Suppose that a fellow student or a fellow workman beat you by cheating. What would be your reaction.
8. Think of yourself as hearing someone making a sneering remark about religion. How would you feel and what would you do?
9. Imagine someone treating you with condescension or toleration. What is your reaction?
10. If someone suggests by their attitude or words that you are not living up to the standards of your professional status, what is your reaction?

SERIES E.

1. I am going to ask you to think of yourself as following each of several professions and I want you to tell me how you react to the thought of yourself in reference to such a career: teacher, preacher, missionary, doctor, nurse, lawyer, actor, singer, musician, writer, engineer.
2. If you very much desired to do something which involved no question or right or wrong and your friends or relatives objected, what would you do?
3. Think of yourself as being very much lauded and feted. What would be your response to such treatment?
4. Think of yourself as entertaining people of your own social status or higher. What would be the effect upon you?
5. Think of yourself as being a leader in a club, society, school or a sport. How do you respond to this position?
6. Think of yourself as having your opinions contradicted. How do you feel and what do you do?
7. Imagine yourself as thinking it your duty to act in a certain way of which your friends and relatives highly disapproved. What would you do?
8. Think of yourself as a member of a discussion group of your own school or own set. Do you express and defend your opinions?
9. Think of yourself as being permanently financed by your family or friends. How do you respond?
10. Think of yourself as meeting strangers. Are you usually liked by them?

SERIES F.

1. Imagine yourself being ignored by your own set. How do you feel and what would you do?
2. Think of yourself as being beaten in some game of skill. How would you feel and what would you do?
3. Think of yourself as being one of a formal company and being shabbily and unsuitably dressed. How would you feel and what would you do?
4. Think of yourself as attending a meeting in which there are set speeches. Are you apt to arise to give your opinions and criticisms of these speeches?
5. Imagine yourself as being justly punished by a superior authority. How do you feel and what do you do?
6. Think of yourself as having done something which is not up to your standard of behavior. What is the effect upon you?
7. Think of yourself as mingling socially with a group of people more highly educated than yourself. What is the effect upon you?
8. Think of yourself as failing to make good in your job or failing to be promoted in school. What is the effect upon you?
9. Think of yourself as mingling with a group of people whose point of view is entirely different from your own and who scoff at your ideas and ideals. What would be the effect upon you?
10. Think of yourself as being disgraced socially by the act of someone of your family. What would be the effect upon you?

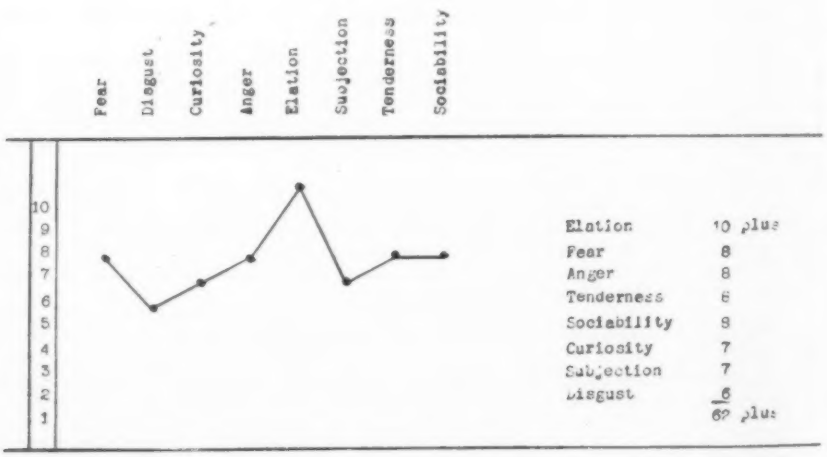
SERIES G.

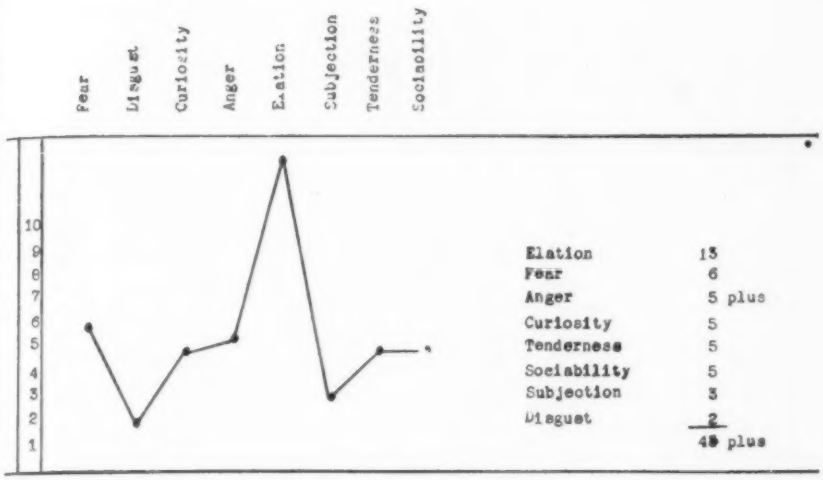
1. Suppose you had a brother or sister who had behaved disgracefully. How would you behave toward him or her?
2. If separated from your mother or someone of whom you are very fond, how often do you write?

3. Think of yourself as seeing a small boy being bullied and hurt by a larger one. How would you feel and what would you do?
4. Think of yourself as being asked for food by a little beggar child. What would you do?
5. Think of yourself as finding a deserted baby on your doorstep. How would you feel and what would you do?
6. Imagine yourself seeing a man or a boy kicking and hurting a little dog. How would you feel and what would you do?
7. Think of yourself as being about to adopt a child and having a choice of two; one well endowed in every way and one equally fine mentally but physically handicapped in some way—lame, deaf, cross-eyed, etc. Which would you take?
8. Suppose that you heard that a person living near you was very ill and all alone. What would be your response?
9. Think of a girl physically white but of black heritage trying to make good in your set. How would you feel about it and what would you do?
10. Think of yourself as being solicited for contributions to alleviate the suffering of children in the far East. What is your response?

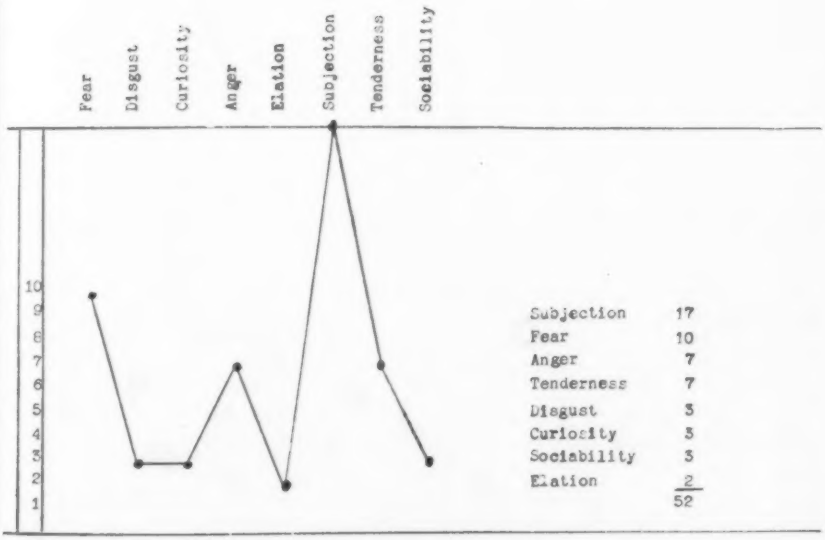
SERIES H.

1. Think of yourself as being invited to join many clubs or societies. How would you feel and how would you act?
2. Imagine yourself in a crowd, on the street, in a boat, or hall. What is your feeling in regard to it?
3. Think of yourself as about to plan a vacation. Would your choice be the country or a lively summer resort.
4. Think of yourself as meeting strangers. What is the effect upon you?
5. Think of yourself at a dance or a card party. How do you react?
6. Think of yourself as playing tennis, football, baseball, golf, etc. What is your reaction.
7. Think of yourself at the theatre alone. How would you react?
8. Think of yourself as working in a company where there were a great many people. What would be your response to such a situation?
9. Think of yourself as living in a college dormitory. What is your reaction?
10. Think of yourself on the day of a much advertised parade. What is your response?

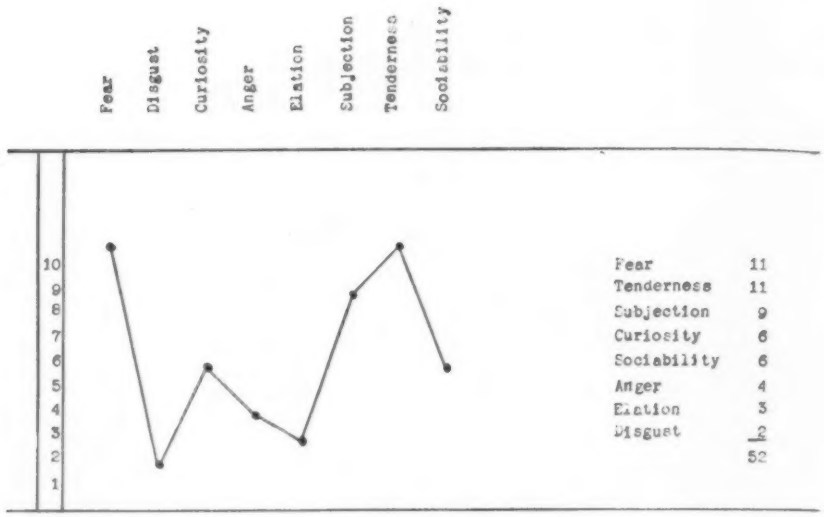




Elation	13
Fear	6
Anger	5 plus
Curiosity	5
Tenderness	5
Sociability	5
Subjection	3
Disgust	2
	45 plus



Subjection	17
Fear	10
Anger	7
Tenderness	7
Disgust	3
Curiosity	3
Sociability	3
Elation	2
	52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Disgust 2
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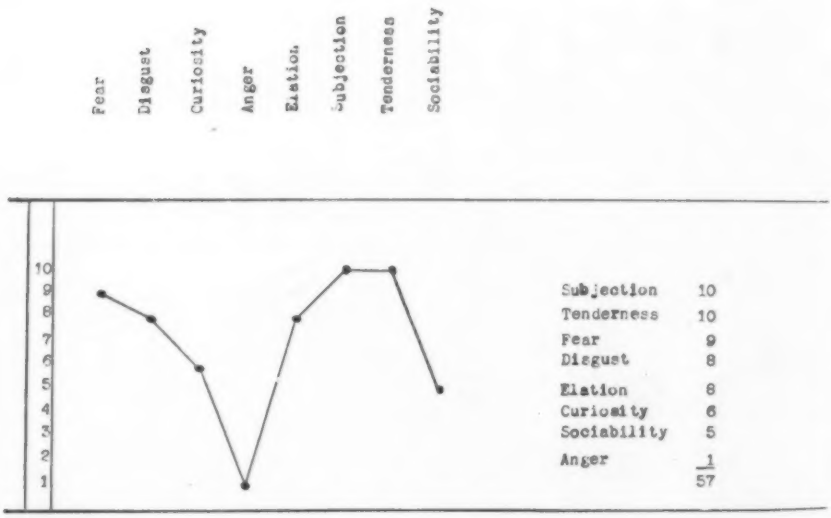
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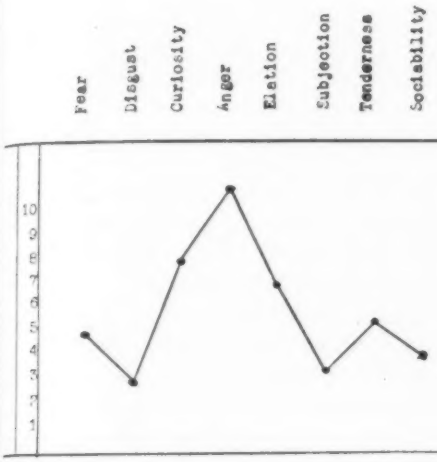
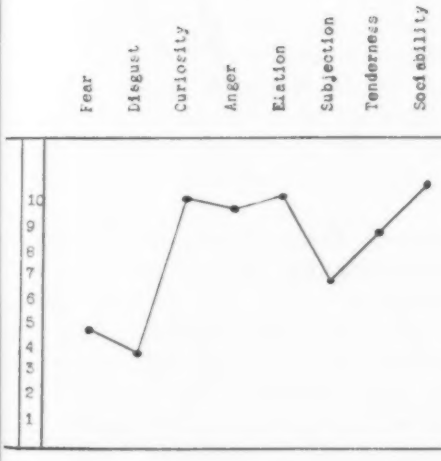
Curiosity 6
Sociability 5
Anger 1
57



Anger	11
Curiosity	8
Elation	7
Tenderness	5 plus
Fear	5
Sociability	4
Subjection	3 plus
Disgust	3
	47



Sociability	11
Curiosity	10 plus
Elation	10 plus
Anger	10
Tenderness	9
Subjection	7
Fear	5
Disgust	4
	67

THE VALIDITY OF THE MATTHEWS' REVISION OF THE WOODWORTH PERSONAL DATA QUESTIONNAIRE

By EDWIN G. FLEMMING
AND
CECILE WHITE FLEMMING

NO less than nine studies have been made and published in which the Woodworth Personal Data Questionnaire, or a direct adaptation of it, has been used as an instrument of investigation. In only one of those has any attempt been made to validate the test by the correlation technique.

Hollingworth (6) used it in a study of two groups of psychoneurotic service men. Miss Everett (2) used an adaptation in the study of school children. Buford Johnson (7) used an adaptation in a study of malnourished children as compared with a group of normal children. Miss Matthews (9) attempted a validation by comparing averages obtained by a group of normal children with averages obtained by a group of children selected because of nervous or unstable behavior traits. Vernon Cady (1) found a positive correlation of .36 between scores on an adapted personal data sheet and teachers' estimates of incorrigibility. Miss Mead (10) used it as a criterion in the study of race differences. Naccarati and Garrett (12) secured no significant results with it. Moore (11) used it as a criterion in a study of radicalism and conservatism. Terman (13) used it as a criterion in his study of genius.

From the Woodworth Personal Data Sheet Laird devised his Personal Inventory Schedule, B2, and reports that the latter is being used to spot those students who are in need of mental orthosis.(8) "At present the tests are in use at Ohio State University, the University of Washington, Ohio University, Purdue University, Colgate University, and Vassar and Olivet Colleges. In addition the schedule is being used in one of the federal hospitals and by several psychiatrists in private practice for evaluating their patients with reference to a fairly normal group and for keeping case records in a quantitative form. It is being translated into Czechoslovakian." Hoitsma (5) has also worked with an earlier form of the Laird test.

Yet from all these studies there are no data which clearly indicate what a score on the Personal Data Sheet, or any adaptation

of it may mean. It is more or less generally assumed that the "P. D. Sheet" somehow gives an indication of emotional stability. Franz,(4) in discussing the test in 1919, said: "Probably any individual who answers 20 of the questions wrongly should be suspected of instability. . . . If the number of 'wrong' answers is greater than 30 grave suspicion of abnormality is warranted."

It is the purpose of this study to determine, or to throw light upon the question whether the Mathews revision of the Woodworth P. D. Sheet is a measure of emotional balance.

The Criterion

A large number of the efforts to develop objective mental and educational tests and to establish the validity of such tests have utilized teachers' estimates of the mental ability of pupils. More recent studies have tended toward the use of ratings of personality traits also. Certainly, while we are working toward objective measures of elements of behavior other than "intelligence", we should utilize teachers' estimates of character traits.

It is legitimate to use teachers' ratings of emotional balance with something of the same attitude with which one notes the influence of similar judgments upon the success of a worker in adult activity. After all, an individual's balance is estimated not solely, nor probably as much, in terms of the intrinsic value of his effort or product, as in terms of what many acquaintances and fellow workers think of him and his behavior. The rating which a man has in the world is the combination of many judgments of his personality and his work; and the latter is inevitably affected by the former.

Numerous investigators have used ratings as a tool in their investigations, and out of their experiences have come many cautions to be observed if the ratings are to be reliable. With the studies and conclusions of these investigators in mind great care was taken to observe their warnings, and to secure reliable ratings.

The ratings on emotional balance were secured as a part of a larger investigation by Cecile White Flemming,(3) in which ratings were secured on a number of character traits. It was found later that ratings on eighty-eight of the pupils could be used in the present study of the P. D. Sheet and emotional balance.

The subjects were eighty-eight girls in the Horace Mann High School for Girls, of Teachers College. They were in the seventh, eighth, ninth, and tenth grades at the time that the ratings on emotional balance were secured.

Factors which contribute to a greater than average reliability for the teachers' estimates used in this study are the following:

1. Superior quality of the teachers in ability, personality, and professional equipment, which makes for definiteness and accuracy of judgment.

2. A preparation in excess of the average secondary school instructor; a preparation involving advanced graduate study in educational psychology and continued contact with others of the staff of Teachers College.

3. A scientific attitude toward experimental work and psychological service and research.

4. An average tenure greatly in excess of that characteristic of the high school. At the time of this study the average tenure of the staff was ten years.

5. A cumulative common fund of knowledge relative to each pupil is permitted, not only by the professional quality and long tenure of the teachers, but by the high persistence of the pupils.

6. Careful check on the progress of the pupils is kept through the attention given by the section room teachers. They serve as advisers to the pupils assigned to their rooms, and confer both with the psychologist and with class teachers relative to the achievement and conduct of the pupils.

7. A written statement is submitted by each teacher for all pupils who receive a monthly report of failure, detailing the reasons for the failure.

8. Quarterly teachers' conferences are held to discuss all cases of unsatisfactory progress.

9. An extensive program of extracurricular activities permits the expression and development of aspects of personality other than mental ability. The teachers observe and study the pupils in the course of their participation in school activities as well as in the regular tasks of the classroom. The value of such observation is increased by the long tenure of the staff, and the comparatively small enrollment which permits acquaintance of pupils and teachers.

Among the directions given to the teachers for rating the pupils on the various traits in the earlier study the following are important in this study of emotional balance.

DIRECTIONS FOR TEACHERS' RATINGS OF PUPILS

In order that the present study of the pupils in the high school may be as accurate as possible and that the final report may be of genuine service to the teachers it is desirable that the teachers' judgments of pupils on various traits and the results of their careful observations of the girls be obtained.

A written record is requested because time will not permit a personal interview with teachers concerning every individual pupil. Moreover, a recorded estimate is essential for statistical treatment; and these judgments must be treated statistically if they are to be included in a report in usable form.

Each pupil in school attendance will be rated by four teachers. The rating will be made by teachers who have known the pupil through section rooms or class contact for this year or longer. Assignments of pupils for estimate will be made from the office. The estimate sheets also may be had in the office.

Please read carefully the preliminary directions on the first rating sheet before beginning the rating.

Directions: 1. In each trait or characteristic named below, compare this pupil with the *average pupil of the same age*. Then make a small cross somewhere on the line for each trait, to show how much of that trait the pupil possesses. Note that in each case one end of the line represents one extreme for the trait in question, and the other end of the line the other extreme. The meanings of the other points are stated in fine print above the line. Before making the cross, read carefully everything that is printed in small type above the line.

2. Try to make real distinctions. Do not rate a pupil high on all traits simply because he is exceptional in some. Children are often very high in some traits and very low in others.

3. Locate your cross *any place on the line* where you think it belongs. It is not necessary to locate it at any of the little division points.

4. Do not study too long over any one trait. Give for each the best judgment you can, and go on to the next. Please omit none. The ratings will be absolutely confidential.

(Two examples of the proper method of rating are then given.)

Trait 6. Emotional Balance.

table temperament. Moods permanent. Self-control; not given to overexcitement or undue depression.	More than average stability and emotional control.	Average for age.	Rather unstable; moods changeable.	Very unstable; always alternating between extreme elation and depression. Loss of control in facing a problem.
.....	.....	.....	.....	.....

The Test Used

Besides the ratings of the teachers on emotional balance available from a previous study by Cecile White Flemming,(3) it so happened that two years later Professor William F. Ogburn of Barnard College, Columbia University, was interested in an investigation in which he used the Matthews revision or adaptation of the Woodworth Personal Data Sheet with the girls of the Horace Mann High School. Those data were made available for use by C. W. Flemming.

Results

The Matthews revision of the P. D. Sheet consists of seventy questions. The results by grades for the P. D. Sheet and for the ratings on emotional balance are given in Table I. The scores on

the P. D. Sheet indicate the number of wrong answers. The scores on emotional balance represent the average of the ratings of four teachers on a scale of five, transmuted into terms of steps in order to eliminate decimals—one step for each half point. A score of 1 represents the individual of least emotional balance; a score of 9 represents the individual of greatest emotional balance.

TABLE I

Grade*	No.	Emot. Bal. Ave.	Emot. Bal. P. E.	P. D. Sheet Ave.	P. D. Sheet P. E.
7.....	13	4.69	2.02	16.46	6.38
8.....	24	4.42	1.06	11.25	6.55
9.....	18	4.17	.82	12.22	6.42
10.....	33	4.24	1.03	15.58	6.73
Total ..	88	4.84	.82	13.84	4.66

* Grades are those in which the pupils happened to be at the time when the teachers' ratings were secured.

An examination of Table I reveals that there is no difference between grade groups in emotional balance as rated by the teachers. This is the result that would be expected, since the teachers were asked to rate the pupils in accordance with other children of the same age. The table reveals, however, variable averages on the P. D. Sheet by grades; but the differences are not statistically reliable.

Table II gives the averages in emotional balance and on the P. D. Sheet for the various ages represented in the group studied. The ages were those given on the P. D. Sheet. Again, as was to be expected, there is no difference in the average scores on emotional balance. There is again considerable variation in the averages on the P. D. Sheet; but the numbers in each age group are too small to figure reliabilities of differences.

TABLE II

Age	No.	Emot. Bal. Ave.	P. D. Sheet Ave.
13.....	4	5.50	17.25
14.....	18	4.44	12.94
15.....	20	4.55	10.25
16.....	23	4.13	14.00
17.....	16	4.13	16.19
18.....	7	4.00	12.31
Total.....	88	4.84	13.84

The Terman group test of intelligence was also given to the pupils at the time that the teachers' ratings were secured. Inter-correlations between emotional balance, the P. D. Sheet, Age, and

the Terman group test are given in Table III. The probable error of all the correlations is around .07.

TABLE III

INTER-CORRELATIONS

	P. D. Sheet	Age	Terman
Emot. Bal.	—.1481	—.1411	.1912
P. D. Sheet		.0767	.0438
Age			.0418

The correlation of —.1481 between teachers' estimates of emotional balance and the Matthews revision of the Woodworth Personal Data Questionnaire shows no relation between this supposed test of emotional stability and the criterion of teachers' estimates of emotional balance as defined in this study.

Using teachers' estimates of emotional balance as the criterion, the correlation with the P. D. Sheet becomes —.1392 when age is partialed out. When age is added the multiple correlation becomes .1965. When Terman is partialed out the correlation between the criterion and the test becomes —.1596; and when Terman is added the correlation becomes .2468. None of these changes is great enough to make the test of any significance for predicting emotional balance as defined in this study.

There is one possible objection to the method used in this study, which is that the scores on the criterion and on the test were secured two years apart. It may be argued that since Table II shows some variation on the P. D. Sheet according to age, that the correlation might have been quite different had the P. D. Sheet been given at the same time that the teachers' estimates were secured.

But if the test is reliable the scores on two givings—even though they be two years apart—should not so alter the distribution that the correlation with a criterion secured at either giving should be significantly different. But Naccarati and Garrett give the reliability of the original Woodworth P. D. Sheet as .90 or more. The questions taken over into the Matthews revision are not vitally changed; and the reliability of the Matthews revision was found to be .67. If the validity of the test be granted then this study indicates its unreliability. This assumption, however, is not warranted, so that it is necessary to conclude that the test is not a valid test of emotional balance as defined in this study.

BIBLIOGRAPHY

1. Vernon M. Cady. The Estimation of Juvenile Incorrigibility. *Jr. of Delinquency*, Monograph No. 2, April, 1923.
2. Edith M. Everett. Tests of Emotional Stability as Applied to High School Students. M. A. Thesis, Columbia University, 1919.
3. Cecile White Flemming. A Detailed Analysis of Achievement in the High School. Teachers College, Columbia University Contributions to Education, No. 196, 1925.
4. Shepherd I. Franz. Handbook of Mental Examination Methods. New York, 1919.
5. Ralph K. Hoitsma. The Reliability and Relationships of the Colgate Mental Hygiene Test. *Jr. of App. Psychol.*, 9, 1925, pp. 293–303.
6. H. L. Hollingworth. The Psychology of Functional Neuroses. New York, 1920.
7. Buford Johnson. Emotional stability in Children. *Ungraded*, 5, 1920, pp. 73–79.
8. Donald A. Laird. Detecting Abnormal Behavior. *The Jr. of Abn. and Soc. Psychol.*, 20, 2, July, 1925, pp. 128–141.
9. Ellen Matthews. A Study of Emotional Stability in Children. *Jr. of Delinquency*, 8, 1, Jan., 1923.
10. Theodora Mead. National Differences in Preferences and Beliefs. M.A. Thesis, Columbia University, 1924.
11. Henry T. Moore. Innate Factors in Radicalism and Conservatism. *The Jr. of Abn. and Soc. Psychol.*, 20, 3 Oct., 1925, pp. 234–244.
12. Sante Naccarati and H. E. Garrett. The Relation of Morphology to Temperament. *The Jr. of Abn. Psychol. and Soc. Psychol.*, 19, 3, Oct.-Dec., 1924, pp. 254–263.
13. Lewis M. Terman. Character and Personality Traits of Gifted Children. In Report of the Proceedings of the Western Psychological Association. *Psychol. Bul.*, 22, 1925, p. 328.

REVIEWS

FEAR—THE AUTOBIOGRAPHY OF JAMES EDWARDS. By John Rathbone Oliver. New York. The Macmillan Company, 1927. Pp. viii + 366.

Although Dr. Oliver has not written "Fear" as a psychiatric manual or as a scientific text, his work deserves the attention of those interested in abnormal phenomena. It may prove difficult to find a systematic theory or description of that class of emotions traditionally called fear. But that does not count against the book. Its value can be ascertained in mental-hygiene units. As an interesting way of conveying to the general public some of the most important points about functional disorders—the result of the author's experience—fiction is resorted to. And Mr. Edwards, a middle-aged successful business-man, becomes the *hero*. His so-called breakdown and subsequent recovery after careful occupational therapy and reëducation (of interests) is the plot-theme. In the last part of the book the attention flags somewhat as the author delivers lengthy disquisitions on the rôle of religion as a protection against fear.

Nevertheless there are important ideas about fear. Functional disorders may be caused by fear-reactions which lead to obsessions and inhibitions. ("Inhibitions are things that you want to do and can't. And obsessions are things that you don't want to do and must.") The fear-reaction is said to have had influence on the course of evolution: "All along this line of advance the animals, or the men, who *weren't* devoured or crushed to death were the animals or the men who had been afraid-in-time."

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TWO SOULS IN ONE BODY? A Case of Dual Personality. A Study of a Remarkable Case: Its Significance for Education and for the Mental Hygiene of Childhood. By Henry Herbert Goddard. New York. Dodd, Mead & Company, 1927. Pp. xiii + 242.

A case of multiple personality is reported upon by the author. It is presented in clear-cut manner to the general reader. This particular case was given rather wide publicity by newspapers and the popular fancy reacted to it excitedly. Letters are here included that were written to Dr. Goddard by astrologers, spiritualists, Christian Scientists, homeopathists, phrenologists, demonologists with suggestions for certain cure. And the author certainly does run down a miscellaneity of nonsensical and superstitious notions.

Norma, testing fifteen in intelligence, and Polly, testing four on the Binet-Simon scale (and a later phase), Louise, sixteen (not tested) are the three personality phases of Goddard's case. The first day a rapid and

varied alternation of phases was noted—the personality having changed eleven times. In addition to the principal personalities note is made of mixtures and blends: Norma-Polly and Norma-Louise mixtures are described—there is a "low-grade" Norma, a Polly-like personality, and a personality "in all the stages of Polly". There is a detailed chronological account of the personality alternations and transformations. Hypnosis is frequently resorted to for making "Norma remember Polly and Polly remember Norma" but the author does not attribute therapeutic value to it in multiple personality. His own theory is neurological and as such goes beyond a psychological conception. Neither preoccupation (Max Meyer), nor incubation and maturation of the complexes which emerge as a personality creating an exaggeration of one or other side of the personality (Morton Prince) is the fundamental explanation of multiple personality. Goddard analyzes it, nevertheless, as exaggerated hysteria which in turn is extreme susceptibility to suggestion. But for him at the basis of a dual or multiple personality is a "*more or less exhausted or weak nervous system*—a nervous system that does not develop its full quota of energy". And a "hysterical person is one whose radiators are not all going because there is not enough energy or steam to fill them all". The Polly-Norma case exemplifies this theory as the early history is interpreted and as the "real cure took place when the nervous system had sufficiently recovered its energy to be able to keep the entire brain in activity". An energy-theory of *multiple-personality*.[1]

An addition volume is thus added to the archives of multiple personality, a series of now famous classics but few in number. Another experimental method has been used although not intensively or extensively application of intelligence tests. The historic Prince-Peterson psychogalvanic research in the C. B. A. case (cf. Whately Smith's suggestive interpretation in relation to intra-individual p. g. r. correlations) is now supplemented by the intelligence-tests (and a pioneer in that field). It now remains for future cases of multiple personality to be studied carefully utilizing the best and accurately controlled experimental methods. Reaction-time, motor speed should be investigated. And herein is a rare field for investigation of variability.[2] Light can be thrown on the laws of variability, on mental motor, and emotive variability.

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THE PSYCHOLOGY OF PLAY ACTIVITIES. By Harvey C. Lehman and Paul A. Witty. New York. A. S. Barnes and Company, 1927. Pp. xviii+242.

An experimental description and empirical interpretation is here set forth of the varieties of play activities. The interest of the authors is

[1] For a more elaborate formulation of this energy-theory cf. this Journal, 1926-27, *21*, 189 the article in which this case was first reported by the author.

[2] For extension of studies of Dodge and Hollingworth—where natural maximum variation is found.

directed on the external structure of play and not in the mechanical dynamism differentiating these activities—the quadratic inter-relationship of emotionality and energy. To follow up the splendid work related in "The Psychology of Play Activities" would necessitate a direct plunge into the depths. In the future, research must be guided so that the underlying psychology of play be displayed; *and the* how-we-play be understood. But here is a sound beginning. Regardless of the crude and protopathic means that the authors made use of, the purpose of the book as stated in the preface has been achieved. It represents "but a beginning of quantitative measurement of play behavior".

Several thousand pupils were given a play-quiz of two hundred items. Underlying the quiz is the theory that play activities are "those behavior manifestations which individuals exhibit 'just because they want to'." Reliability of the results is assumed without direct statistical evidence being presented. Statistically, the results are of intrinsically suggestive values, rather than of detailed quantification. An effective statistical device employed is termed the index of social participation being the "percentage of total activities that the social activities represented". A further refinement of this criterion would evolve a definition of social activity.

The authors find continuity rather than periodicity in play activities for different age-levels. Students of variability will be interested in the conclusion that greater "variability was manifested by the *groups* of younger children than by the groups of older ones. The longest range of activities was found for the children in chronological age groups 8½, 9½, and 10½." Children below Grade III mentioned as many as 800 different activities (play-quiz not used here). In the chapter on sex-differences it is demonstrated that girls showed less seasonal change in their play than the boys; that the differences were most manifest among children of younger age-levels. Whistling and singing are graphically shown to distinguish urban and rural habits. In treating of race-differences the principal point made centers about the high indices of social participation of the Negroes, 65 per cent of those studied reached or exceeded the medians of white children of various ages. There is a brief treatment of seasonal changes, fashions, social environment, playground space, material equipment for playing.

Lehman and Witty have opened up a vast field for reasearch. Methods[1] other than that of the play-quiz could be applied. And then the quiz could perhaps be reconstructed with items equated in value. Nor must the psychology of adult play-activity be forgotten.

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[1] Application of direct experimental-psychology measurements and motor-test technique to the study of play activities is implied. Correlations could be investigated as between play scores (e.g. golf-scores) and motor test data.

FUNDAMENTALS OF HUMAN MOTIVATION. By L. T. Troland. New York. Van Nostrand, 1928. Pp. xiv + 521.

The adroit speculations of the nineteenth century hedonists were for the most part psychologically sterile. For one thing the utilitarians moved so fast in applying their dogma to industrial and political life that it was wrecked by the practical and philosophical developments of the times before its psychological foundations were fairly laid. The top-heavy collapse of hedonism as a social philosophy discouraged for a time further developments in hedonism as a psychological theory. In the decades succeeding Bentham, Spencer, and Mill, it was often proposed that the golden key to motivation might be discovered in the doctrine of instincts which assumed prominence after Darwin. Then, later, came the arresting formulations of Freud and all the ebulitions of the "new psychology," which have left a permanent impress on theories of motivation. Now, it appears, from Professor Troland's book, the time is ripe for a recrudescence of hedonism, purified and enriched by a century of discovery, and founded at last on a standard neural physiology.

The keystone to the *Fundamentals of Human Motivation* is to be found in the rehabilitated law of effect which Troland calls the principle of "retroflex action", and defines as "the process whereby stimulation of beneceptive or nociceptive mechanisms facilitates or inhibits concurrent cortically adjusted responses. It is the physiological mechanism of pleasure and pain" (514). The hedonism which results from the affirmation of this principle is not a "hedonism of the present" or "of the future" which regards action as directed to obtain either immediate or ultimate satisfactions. Troland's doctrine is rather a "hedonism of the past", and "merely asserts that prior affective experience is in fact the actual determinant of the existence of purposes, whatever their present content may be" (355). His view is fundamentally in agreement with Thorndike's, with this difference: Troland has a complete, if speculative, theory as to the physiological stages involved in "stamping in".

The theory of retroflex action assumes that in the course of evolution the afferent phase of the nervous system has developed the qualities of nociception, beneception, and neutroception. The first is illustrated by the afferent mechanisms of pain, hunger, bitter, thirst, extreme warmth and extreme cold, and other organic needs including low intensities of sexual appetition. These sensory processes have the capacity to diminish the "conductance" (heighten the resistance) of all cortical adjustors functioning concurrently. ("Concurrent" obviously must be understood to include the pathways which are still in a phase of after-excitation.) High intensities of the stimulus and the general state of organic tonus may within limits reverse the functions of beneceptors and nociceptors. The neutroceptive processes (*e.g.*, vision and audition) are chiefly important in conditioning the retroflex mechanism (207f.). The susceptibility of retroflexes to conditioning and compounding accounts for the complexity of motivation (371).

The author accounts for learning chiefly through the agency of the retroflex. His emphasis falls in such a way, however, as to account least satisfactorily for movements of withdrawal and avoidance. In the familiar case of the "burned child" he attributes the caution learned to the fact that "the flame-finger-thrust adjustor has had its conductance decreased, and, hence, is permanently less liable to recur" (218). Avoidance is thus made out to be a negative matter, achieved by the inhibition of the extensor thrust. But the question naturally arises in the reader's mind: Is not avoidance traceable definitely to flexor innervation, thus making it a positive act? If so, the author's theory is placed under a severe strain, since nociception would have to be conceived as possessed of the power to *enhance* conductance in one adjustor (flexor innervation) as well as to diminish conductance in the reciprocal center (extensor innervation). Pain seems to teach in a manner more direct than the theory allows. . . . In reply the author might argue that withdrawal brings a satisfactory state of adjustment, and hence through beneception reduces permanently the resistance of the flexor mechanism. Such a reply is acceptable only if the concept of "beneception" is broadened to include relief from pain. Such an inclusion, while theoretically possible, has the disadvantage of leaving behind once for all the definite correlation between beneception and specific sense organs which the author himself believes to exist.

There is a strongly sensationalistic flavor throughout the work. It is usually either the configuration of the stimulus energy or the affective predispositions of the sense organs that bears the burden of the explanation of motives. Though the author rejects perceptual disposition as a criterion of instinct, he advances a view in favor of "appetitional" instincts which are characterized by randomness of motor discharge but a high degree of sensory specificity (142). Neurograms are treated as though they were impressed upon the cortex through afferent activity alone, and preserved through the afferent activity of the retroflex (309, 215–16). And virtually all selection of pathways is attributed to the afferent impulses which according to their beneficial or noxious nature raise or lower conductances (205). Consciousness itself is supposed by the author to be correlated exclusively with the final stage of convergence in the afferent pattern (integrative activity) (180).

In view of all this sensationalism it seems a little strange that the writer repudiates the view that affective experience is sensory (280), but regards it as merely attributive, its intensity being "proportional to the rate of change of cortical adjustor conductances at any moment" (287). None of the theories which identify affect and sensation receive sympathy; his (like Meyer's) is a purely central theory. The views which relate affect to the autonomic nervous system are disposed of summarily with the statement that the autonomic is primarily an efferent system. The sympathetic is regarded as interesting chiefly because of the close anatomical relations between its centers in the thalamus and those of the pain sense (123). It is probably to these nerve centers rather than to the return

afferents from the viscera that we must look for the generation of affect. The theory of rate of change in conductance does seem to account especially well for aesthetic pleasures which gave James so much difficulty (Troland calls them chiefly pleasures of novelty), but the theory as it stands overlooks the common testimony that vivid visceral components in affection can frequently be localized.

The book is noteworthy for its definiteness of doctrine respecting the neural processes involved in motivation. Its imagery respecting neurograms, foci, and areas is quite concrete. Physical analogies are employed, and even Ohm's law is invoked as probably valid in the field of neurophysiology. Such definiteness may be defended on heuristic grounds provided it does not become dogma. But the newer work on the mass-action of the cortex, suggesting the undifferentiated functioning of syncytium cells rather than permanence and specificity in conduction pathways, is not considered by the author. As it stands his theory is based upon a definitive neurology, which to-morrow may need extensive revision.

The strictly physiological emphasis of the work the author does not regard as an endorsement of behaviorinsm which, he says, is "incomplete and humanly unsatisfactory because it leaves out of account the very phenomena which really interest us most" (257). The point of view of the author is neither behavioristic nor mentalistic, but truly psychophysical (256), and in the final analysis is regarded as compatible with a panpsychic monism (500f.).

There is probably no treatment of the psychophysiology of sex motives more complete than Troland's. It is a pity that the argument is widely scattered through the book, instead of gathered into consecutive chapters. It is well worth reprinting as a separate contribution. Characteristic of the author's method, this theory takes its point of departure in Sherringtonian physiology, postulates both the nerve centers and the functions necessary to account for the phenomena observed, and rigorously follows through the consequences of these postulates, until a highly original and quite plausible schema of sexual motivation is complete.

Troland has a neat way of presenting brief case problems in motivation, and his paradigms are certainly less fantastic than those of the "new psychology". Unlike most works on motives there is no nonsense in the formulations, and none of the vagueness which the author, in common with most occidental psychologists, miscalls "mysticism". But along with this unfailing realism the author employs enough scientific imagination to bridge many gaps in knowledge. Only in the comparatively trivial chapter on personality does the speculation fall short. This inadequacy can be excused on the grounds of the intricacy of the problems involved and the author's passion to establish first the fundamentals of motivation.

Even psychologists will need at times to turn to the excellent glossary for help with the somewhat esoteric terminology. But the distinctive quality of the work does not depend upon neologisms. It is the thought that is original. Its broad scope also provides foundations for virtually a whole system of psychology, as indeed any adequate treat-

ment of motivation would have to do. These qualities, among others, give the work remarkable richness and strength. Disagreement is in this case itself a tribute.

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AN INTRODUCTION TO SOCIOLOGY. By Wilson D. Wallis, Professor of Anthropology and Sociology, University of Minnesota. New York. Alfred A. Knopf, 1927. Pp. xv + 433.

This is a descriptive interpretation of the Social World.

Part I describes life in primitive societies and in Oriental, Grecian, Roman and Western European groups.

Part II summarizes the social theories.

Part III deals with the external factors influencing social life.

Part V discusses phases and problems of modern society with chapters on The Family, Religion, Education, The Press, Politics and Law, Industrial Organization, Poverty, Mental Deficiency, Delinquency, Race Problems, Immigration and Population.

The concluding Part VI indicates the trend of social development.

The author's treatment of psychological factors influencing group life which occupies the major feature of Part IV is likely to be of most interest to readers of this journal.

There is a close kinship between psychology and sociology. Professor Wallis recognizes psychology as fundamental to an understanding of social life. Indeed in his definition of sociology as the study of the behavior of men in social groups and the activities of the groups he very closely identifies sociology and social psychology. He calls attention to the need of reaching some definite agreement upon such disputed problems as the existence of the instincts and believes that psychology must join hands with the social sciences in solving such questions. He argues that the problem of the instincts, for instance, cannot be determined by reliance on mere analysis of the individual since the individual continually absorbs portions of the social world. The cultural and psychological aspects of group life must be studied as phases of one entity. Laws of social psychology apply in different manner in different culture groups.

Current definitions of society which emphasize a mere psychic interaction between individuals are inadequate to Professor Wallis who recognizes the psychological content but insists that it must be of a particular kind, *i.e.*, a common dominant purpose. He does not overlook the place of the individual in the group but regards group and individual as "two supplementary factors, both of which must be taken into consideration in an endeavor to determine the character of individual mind and that of social stimuli". Man no longer (if ever) exists in isolation. "Absorption into the group is a two-fold process, a system of reciprocal influences, in which the individual is acted upon by group and reacts toward it. There is not merely absorption of the individual into the group,

but likewise absorption of the group by the individual." Upon much the same reasoning the author takes the position that the instincts as treated by Professor McDougall are not only of doubtful validity but are superfluous in a scheme of social psychology. "We do not need them to explain the actions of men in group life, for group life is the explanation of these so-called instincts. The primary incentives to specific forms of behavior lie outside the individual and within the group."

Professor Wallis also rejects the view that the group is not a reality which transcends the component individual but is only an aggregate of individuals and takes the position that individual psychology offers no explanation of the difference between group and group. He points out that a group which functions as an entity such as a family, a community or a nation functions with a permanence of purpose greater than that of any of its component parts and that individual attitudes within the group are more often effect than cause of group attitude.

Differing from LeBon and Conway, Professor Wallis distinguishes between the crowd and crowd psychology and the mass and mass psychology. He finds contact through one of the senses essential to the crowd and its transient and hunted field of attention, its shifting of emphasis and aim and the summary manner of its action sufficiently distinguishing behavioristic traits to warrant its classification apart from the mass. Here, again, he points out that individual psychology does not provide sufficient insight into the behavior of the individual in a crowd.

Language and custom as social habits treated as both product and cause of group life and the influence of history, tradition and opinions are noted.

If Professor Wallis is correct in his analysis, sociology seems as necessary to the psychologist as a knowledge of psychology is to the social student. Certainly no better approach to the psychosocial questions is likely to be found than Professor Wallis' work distinguished as it is by a charmingly lucid style, exact scholarship and broad sympathy, and insight. One of the notable features of the book is the examples which the author gives to illustrate his points. These reflect his anthropological interests and add greatly to the vividness of the text.

JOHN A. SLADE.

Saratoga Springs, N. Y.

THE MATRIX OF THE MIND. By Frederic Wood-Jones, Professor of Physical Anthropology, University of Hawaii, and Stanley D. Porteus, Professor of Clinical Psychology, University of Hawaii. Honolulu: University Press Ass'n, January, 1928. Pp. x+457. Illustrations, 80. Price, $4.00.

This work is one of several recent signs of good times coming for psychology, for it relates useful, straight science as to the relation of body and mind—and science, too, uncontaminated by unjustified speculation or narrow propaganda. Punctilious indeed, and dogmatic beyond the sanctions of the material, would be one who would dispute any statement that

the book contains, yet of statements it makes a great many. It is intended, says the preface, to provide a common background upon which the authors' further studies of human nature might be projected, racial differences being the ultimate problem of their research; but the present work is complete in itself, and valuable.

Professor Porteus wrote slightly less than one-third of the book, and he is to be thanked as well as congratulated for leaving out so much of what, were he less of a philosopher, he might well have included, for, as we know, psychologists as a swarm, will never be condemned for their sins of graphic omission. He has culled and chosen well.

The reviewer knows no other way of conveying an idea of the contents and the precise method of the work in so few words and so accurately as by a transcription, according to his custom, of its fifty-five chapter titles, they are as follows: Sensation and movement; sensory and motor nerve cells; appearance and behavior; intuition and panache; mistakes in brain building; moving forwards and making a brain; linkages and neurobiotaxis; limitations and the relevant stimulus; the rise of the pallium; surface and volume; structure and folding; structure and function; order in representation; the rise of the smell brain; the fall of the smell brain; linkages and failures; sensation and the lowest sensory neurons; the second sensory neuron; the highest sensory neuron; the thalamus and sensation; informative areas; the pallium and awareness; acquirement of awareness; the pallium and the body; the pallium and movement; movements and muscles; the upper motor neurons; the corpus striatum; the labyrinth; muscles and movement; what the cortex cannot do; the cerebellum; changes in level; movement and education; the brain and the hind limb; the lower motor neuron; control of the viscera; sound and the brain; auditory associations; the photostatic system; elements of vision; completed vision; the triumph of the pallium; our original equipment; biological pathways; senses and sensitivity; facilitation; stimuli and responses; built-in habits; preparing for the cortex; neural crossroads; the usual and unusual; sense of aliveness; enjoyment and appreciation; the cortex and intelligence.

The last of Professor Wood-Jones's chapters is "The Triumph of the Pallium". In all that he says about the "mantle" of our cerebral hemispheres there is no word as to the neopallium and the archipallium, and there is no mention of the determining myelinization of the neural pathways. In these two respects his discussion is not precisely up to date; the limitations of the book precluded their discussion, perhaps, but certainly not their mention as functional determinants of the first importance. On the other hand, he tells us of the neothalamus and the neocorpus striatum.

There are many passages in the first part of this treatise which are so keen in their neurology that any reviewer would like to adorn his contribution with them. The whole four-page chapter "Intuition and the Panache" is a "delicious" contribution to anthropology in its psychologic aspect. "Where [indeed] would most of us be in the esteem of our fellows

did we not appreciate the proper employment of panache. It is for the student of his fellows, be he a physician or policeman, to discriminate between the panache and the patient." And how naïve and yet scientific is this from the preceding chapter: "It is surely a strange thing that a part of our external surface should, during development, become buried in our bodies and tucked away inside a bony case as our brain and spinal cord. . . . We might say that the nervous system was dual in nature, that there was an external nervous system consisting of our sensory skin and our sense organs, and an internal nervous system consisting of our brain and spinal cord; the two systems still linked by the protoplasmic bonds which are the nerves. . . . The outside of the body, or external nervous system, is what others can see, is in fact *what we look like.* The internal nervous system dictates our actions and our conduct and is in fact *what we are.*"

This last is a materialistic opinion seemingly somewhat at variance not only with the opinions of its writer's collaborator but with his own as expressed elsewhere, for example in Chapter XLIII: "Awareness then has led to this: that it has given us a typically human attribute of the considered actions of the individual towards its human environment", etc. Incidentally, this is an excellent illustration of the utter impossibility of trying to be materialistic and humanly commonsensible at the same time; it cannot be done, for materialism and reality will not mix. It constitutes certainly one of the most difficult problems to be overcome in any discussion of the mind-body relation that ignores metaphysics.

Doctor Porteus discusses consciousness acceptably as the "sense of aliveness", in his usual attractive way, and gives us excellent psychology in "Enjoyment and Appreciation" and in "The Cortex and Intelligence". "Would it not be wise and honest", he asks, "to scrap altogether the term 'intelligence quotient' and to speak of the test-verdict merely as what it is — an elementary learning-capacity index?" But there are hundreds of other terms in good use whose denotations and connotations have materially changed; and the testing mechanicians by now should be about gone.

The book altogether is of much value to those who do not already know its material. It is a noteworthy contribution to one of the leading problems of our early scientific day, with more than the average amount of originality in its setting-forth.

George Van Ness Dearborn.

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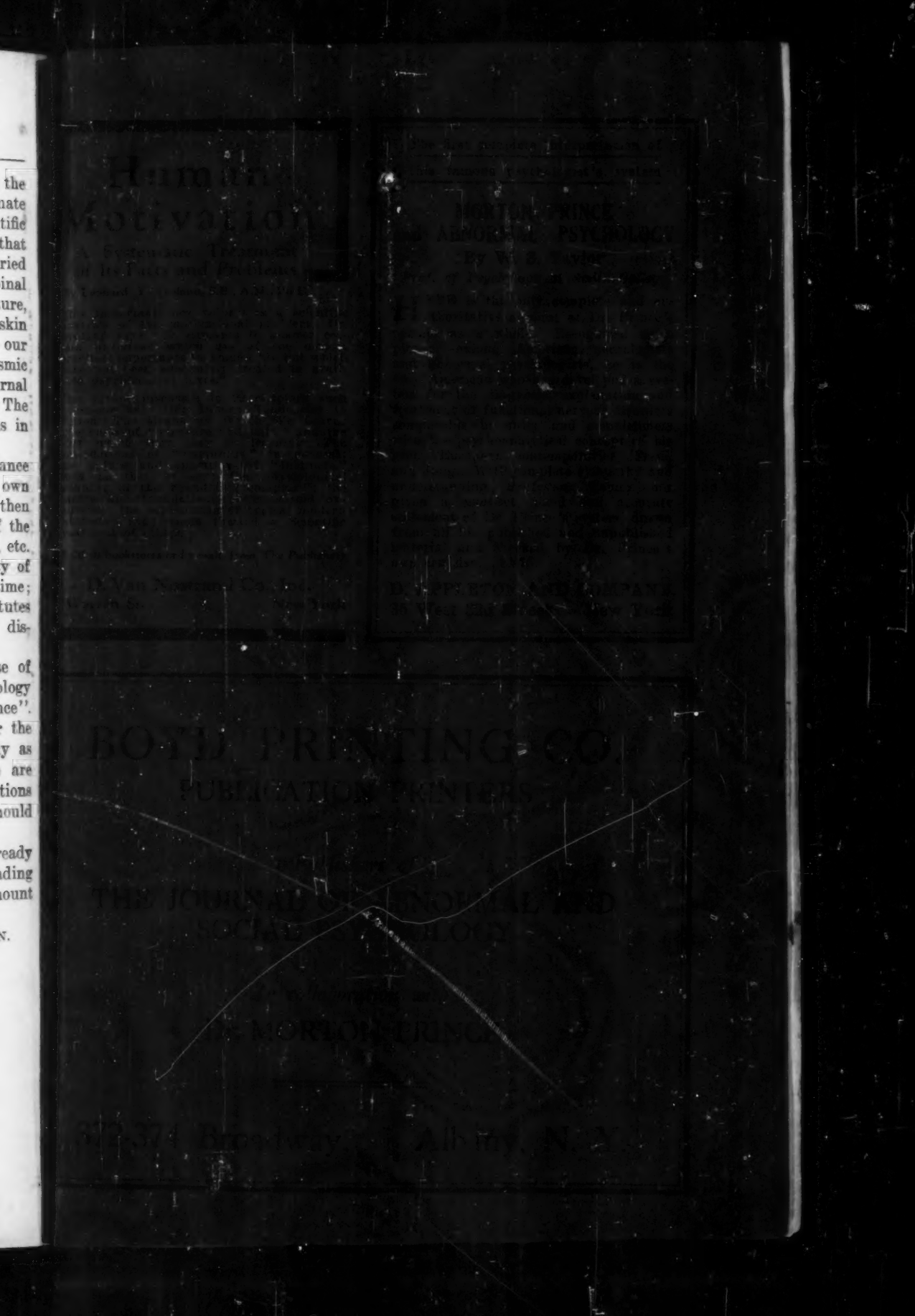

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